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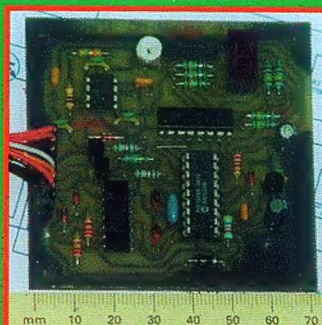
MAY 2001

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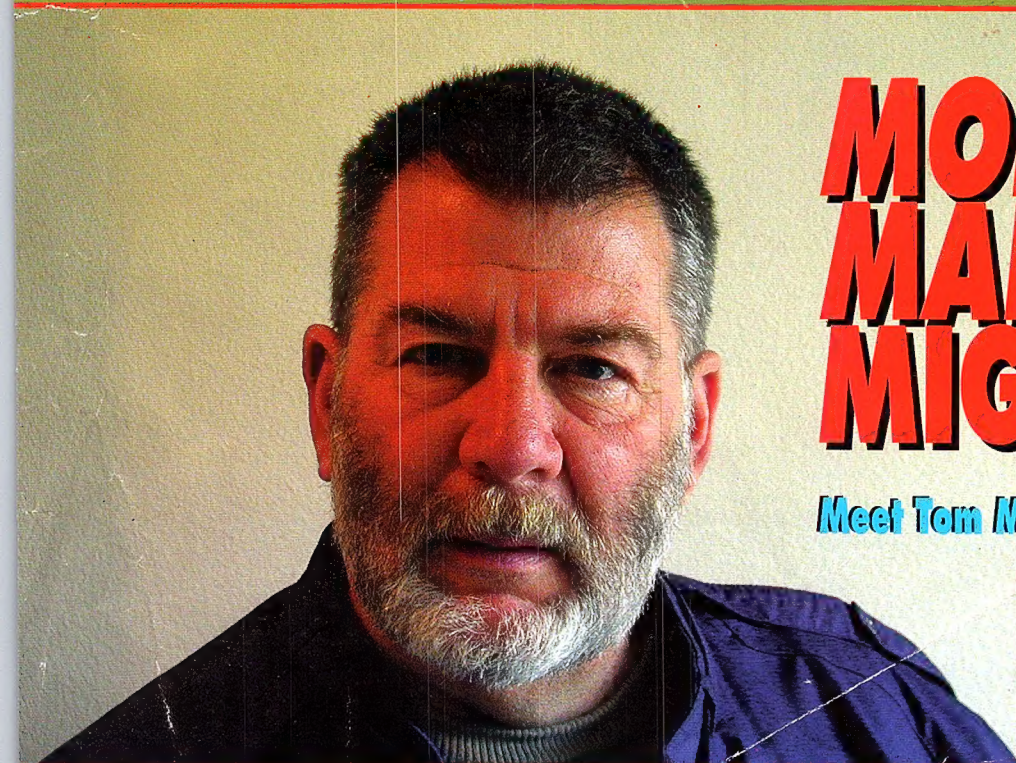
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THE REAL MAGAZINE FOR RADIO ENTHUSIASTS



**Lots of
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columns
and
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WIN ME!



MOFFAT'S MADHOUSE MIGRATES!

Meet Tom Moffat, VK7TM / KV7TM

ISSN 1445-0607



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UH052



UH050

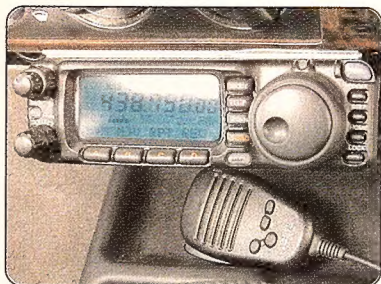
When you need a free hand

The UH052XR UHF Radio from Uniden has built in VOX - special voice activated transmission circuitry, for hands free operation with the optional VOX headset microphone, for when you really don't have a hand to spare. It's also splash proof because you can't always get out of the rain. And with a 950mA long life battery and 5 watts of transmission power as standard with the UH052XR and UH050XR, you can be sure to stay in touch.

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JAMES3270

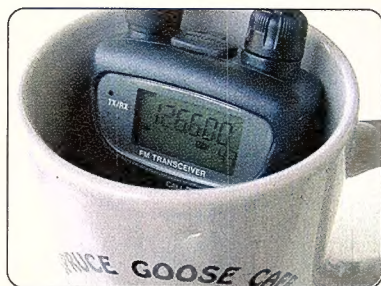
Uniden
Unleash the Power!



It's remarkable just how much they can cram into a compact radio these days! The new FT-100D does just about everything...

PAGE 10

Now, who do you reckon would be silly enough to store their Icom IC-R2 scanner in a coffee mug? Oh, hang on; is it a scanner?



PAGE 16



Get a handful of this! Two 'AA' cells gets you just about the whole spectrum in just about every mode there is...

PAGE 58

SUBSCRIBE TODAY!

CALL 1800 72 5555

Yaesu FT-100D HF/VHF/UHF review 10

This is one quite amazing radio! You could rip all your old amateur transceivers out of your car and just put this one in their place. It's tiny, remote-controllable... and very, very good!

Subscribe, SAVE and WIN!! 14

You'd be a mug to pass this up! Subscribe to Radiomag and you could WIN one of SIX radios — but that's not all! You could also SAVE UP TO \$40 at the same time! Don't miss this!

Antennas and Feed Lines 18

Each month in "Technically Speaking", Ron Bertrand looks at different aspects of radio, and explains how things work in the real world.

Shortwave Antennas for All... 32

Hey, so you have one of those nice shortwave radios? A portable or even a home unit... But you're not quite sure what to do with it, or the antenna's a bit on the crook side? Read this!

LIFTOUT GUIDE: Useful Frequencies 42

Some of these little gems will surprise you! We've dug deep into the books of words to find some of the wackiest information!

Remembrance Day Contest Results 56

Queensland rules... find out here how you fared...

REVIEW: Yaesu VR-500 scanner 58

How can something so small do such a big job? One baby-sized radio seems to do just about everything! Could this be the ultimate portable scanner? We gave it to "Starlight" to find out...

HF services for all comers... 68

Here's a great guide to just about every form of communication you can use out in the bush, and VKS-737 Network News to boot!

PROJECT: Build a CW Identifier! 73

Here's a useful construction project from a self-confessed UHF 'junkie' in the form of Russell Lemke, VK3ZQB. If you want your tail to warble, well, Russell's your man!

IPS Propagation Charts 68

The Radiomag brief was simple: make the propagation prediction charts useful to all our readers. The IPS back room crew knuckled down to the task, and we debut the new-look charts this month!

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- 80 Modifications - More and better than ever before...



Having problems with your **MOBILE PHONE antenna** **RECEPTION?**

**Why not try our new High Performance
Cellular Phone Antenna!**

The Cellfinder is a new range of cellular antennas which are now available from Mobile One. Available for Digital or CDMA/Analogue. The Cellfinder range of antennas are specially designed for use in country and fringe areas where cells are few or signals are weak. The Cellfinder is enclosed with a strong fibreglass radome and is supported with a heavy duty stainless steel spring, with the 1/2 inch stud mount. This range of antennas are light weight (320 grams) and can be used for both mobile or base application.

CELLGSM (Digital)
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or

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Editor and Publisher

Chris Edmondson, VK3CE
E-mail: publisher@radiomag.com
Telephone: (07) 5545 0666
Facsimile: (07) 5545 0622
Mobile: 0417 35 3599

Associate Publisher

Trent Sampson, VK4TI
E-mail: sfs@radiomag.com

All editorial mail to:
Radiomag Pty Ltd, PO Box 123,
Eagle Heights, QLD 4271

Display Advertising

Eileen Harris
HWR Media, 109b Conyngham Street
Frewville, SA 5063
E-mail: adverts@radiomag.com
Telephone: (08) 8379 9522
Facsimile: (08) 8379 9735

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Contributing Editors

Amateur DX: Alex 'Tex' Ihasz, VK1TX
E-mail: txdx@radiomag.com
AN4WDRN: Steve Johnston, VK5ZNJ
E-mail: vks737@radiomag.com
Education: Ron Bertrand, VK2DQ
E-mail: ron@radiomag.com
Legal Eagle: "Judicious Rex"
E-mail: judicious@radiomag.com
SW / Broadcasting: Bob Padula OAM
E-mail: monitor@radiomag.com
Moffat's Madhouse: Tom Moffat, VK7TM
E-mail: madhouse@radiomag.com
Modifications: Mike Lambert, VK4VZK
E-mail: mods@radiomag.com
News Desk: John Kolm, VK3YJK
E-mail: newsdesk@radiomag.com
Pacific DX: Steve Gregory, VK3OT
E-mail: vk3ot@radiomag.com
Scanning: Frank Calabrese
E-mail: scanning@radiomag.com
Contests: Ian Godsfil, VK3VP
E-mail: contests@radiomag.com
Military / Utilities: "Starlight"
E-mail: utes@radiomag.com
Satellites: Arthur Andrews, VK2AAE
E-mail: satellites@radiomag.com
History: Kirsty Jenkins-Smith, VK9NL
E-mail: vk9nl@radiomag.com

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Editorial Comments

By Chris Edmondson **VK3CE**

Welcome to Radiomag!

G'Day Australia and New Zealand, and a very warm welcome to your new radio magazine, Radiomag!

Not that we're strangers at all, of course. My name is **Chris Edmondson**. I'm the Publisher and Editor of this new title. My amateur callsign is VK3CE, a Victorian call, although I've been a Queenslander for almost two years. I'm also VJV33 on the commercial HF bands, and am V115 on the VKS-737 network. Until December last year, I was the Editor of an ACP-owned radio publication. But I'd always wanted to realise the fullest potential of a magazine like this, and thus **Radiomag** was born. We're all about today, tomorrow, and the years to come. Let's tell you a little about **Radiomag** and, more to the point, the people behind it.

Associate Publisher **Trent Sampson**, VK4TI is the Contests Manager of the WIA's Queensland Division. A keen amateur from a family of 'hams', he brings the sort of enthusiasm to the title which is either going to keep us rushing between DXpeditions and Field Days or land us in lots of hot water. Either way, I can promise you it's going to be a lot of fun.

This magazine concentrates on the hobby side of radio, and the sort of lifestyle products associated with it. To our way of thinking, the term 'hobby radio' covers a multitude of sins, and includes such things as amateur and CB radio, bush trekking and GPS, scanning and shortwave, and many other things besides.

But there's more to it than that, of course. A whole lot more. Think of the uses radio gets put to these days. Such people as the adventurous who know (and care) little about what's inside their radios who head for the scrub, HF whip flopping wildly as they careen about the bush... Yachties who somehow fit an HF marine radio inside the cramped little cabin and, with a backstay antenna, head for the Pacific islands... The backpacker who wants a GPS receiver so he or she always knows where home is... The farmer who wants a UHF CB box for the tractor...

These people and so many more like them are also going to benefit from reading Radiomag. We may be able to help with all those little questions. You know, things like *which* radio, GPS or whatever to buy, *how to* questions ranging from installing the gear in the first place, or upgrading and improving your antennas to building simple and not-so-simple projects — and so much more.

As always, there's an element of education in everything we do at Radiomag. If you think about it, not only are you enjoying your hobby while you read these pages, but you also benefit from the learning process. So we figure we should also have an element of direct teaching in here each month. Hey, some of it may be either way over your head at times or seemingly crashingly basic to someone at your level, but we cater to a very diverse group of people here, and want to appeal to *all* of the group.

And what good is any of it if you can't have the occasional smile along the way? So we'll make sure you can explore and exploit the light-hearted side of your leisure time too.

We're thrilled to have a really superb team of dedicated writers aboard as well. Let's introduce a few of them now. In no particular order, we welcome and applaud...

Tom Moffat, VK7TM/KV7TM. Tom's most recent works for Australian readers have been seen in *Electronics Australia*, under the banner *Moffat's Madhouse*, an oft-riotous look at the world of communications. So pleased were we to spirit Tom away from EA that we filched his column name as well! We're absolutely delighted to have Tom join us... and welcome back, mate!

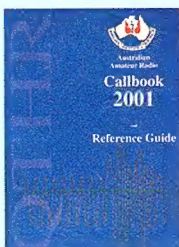
Steve Johnston, VK5ZNJ. Steve tells everyone he's a radio technician. Really? Steve? I have no idea where he finds any time for it! Steve is Chairman of the Australian National 4WD Radio Network, Inc, sensibly abbreviated to AN4 but probably far better known as the VKS-737 network. Steve spends time looking after and nurturing the network that he probably drea-

DON'T MISS THE ACTION!

WIA Amateur Callbook 2001

Features a wide range of information about amateur radio, and includes an updated listing of call signs, names, and postal addresses of all radio operators licensed by the Australian Communications Authority.

B 2345



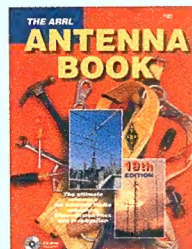
NEW

\$24⁸⁰

ARRL Antenna Handbook 19th Edition

Learn how to design and build your own antenna. This book covers broadband antennas, gain and size comparisons for multi-element arrays, log periodic, quad, long-wire and travelling wave antennas. Includes a CD-ROM with two new Windows programs, detailed propagation forecasts, and more.

B 2214



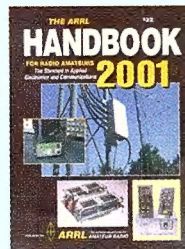
NEW

\$69⁷⁰

ARRL Ham Radio Handbook 2001

This is the 78th edition of the standard reference book for radio amateurs, electronics technicians and professional engineers. 1200 pages translate theory into practice through a large variety of hands-on-projects.

B 2238



NEW

\$69⁷⁰

SB-15 6m/2m/70cm Mobile Antenna

A compact tri-band mobile whip that covers the Australian 6m, 2m, and 70cm amateur bands. It has centre frequencies of 52.5MHz, 146.5MHz, and 435MHz, with good bandwidth on each band. The antenna is approximately 1.5m long, weighs just 420g and includes a fold-over adaptor built into the base section.

D 4818

\$149

CFX-514N Antenna Triplexer

Allows connection of a multi-band transceiver such as the FT-847 to a common coax cable. Inputs cover 1.3 to 90MHz, 130-200MHz, and 300-500MHz, with 500W PEP power rating. Insertion loss is <0.3dB, and isolation between ports is more than 55dB. Uses an N-connector on UHF input, and PL-259 connectors on other inputs.

D 3305



\$168

AS-510 6m/2m/70cm Handheld Antenna

A high-efficiency flexible antenna with fitted male SMA connector that suits 6m/2m/70cm Amateur band transceivers such as the Yaesu VX-5R. Provides improved performance compared to the antenna normally supplied with the VX-5R, particularly on the 6m band.

D 4339

\$69⁹⁵



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Dick Smith PowerHouse stores not only offer an expanded range of those original electronics products that have made our stores famous, but now you can experience the fun of using a wide range of communication equipment in our hands-on demonstration area. Called the "Ham Shack", each PowerHouse store has a dedicated area where licensed staff can show you the latest Yaesu, Uniden, or Magellan communications and GPS products, as well as an expanded range of accessory lines that may not be available in other stores. Not involved in Ham Radio? Staff can also advise on the installation of a CB radio for your four-wheel drive vehicle, how to get involved in listening to Shortwave radio stations from around the world, or assist you in the selection of a suitable accessory for an existing piece of equipment. For bushwalking or boating users, you can also find out about the latest in inexpensive satellite based navigation receivers or emergency beacons, or just browse through an extensive selection of communications related books. The PowerHouse is also the place to go if you simply need a component to finish that weekend project, to buy tools, or just to while away a few hours while checking out our in-store technical books, library CD-ROMs, or our dedicated customer use Internet terminals. With over 20,000 product lines in the electrical, computer,

and communications areas, our new PowerHouse stores get the wavelength right!



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2266DPS4COL

DON'T MISS THE ACTION!

Uniden 245XLT Trunk-Tracker™ Scanner

Now you too can follow the activity on the "trunked" radio networks used by many Government, business, and emergency services organisations. The new Uniden 245XLT Trunk-Tracker is a specially designed scanner that can read the control channel data on a number of trunked radio systems, allowing the receiver to follow specific users, or groups of users, as their transmissions automatically change frequency through a trunked network. Compatible with many Motorola and EDACS analogue trunking systems, the 245XLT is also supplied with a PC interface cable for use with third-party software. The 245XLT covers 66-88, 108-174, 406-512, and 806-956MHz and provides 300 memories in 10 banks for storing favourite frequencies, 5 pre-programmed Search-bands, Multi-Track scanning that allows you to scan a mix of conventional and trunked systems, and 10 Priority channels (one per memory bank). Super-fast Scanning and Search facilities are also provided (Scan at 100 channels per second for non-trunked services, and Search at either 100 or 300 steps per second), as well as battery-free memory back-up, Data skip to limit reception of data transmissions, an Attenuator to reduce overload from very strong signals, and a Battery Save facility to extend battery life. Each 245XLT is supplied with a NiCad battery pack, AC charger, flexible antenna, PC interface cable, and detailed instructions.

D 2735

Uniden®

\$499 **SAVE \$30**



Yaesu VR-500 Multi-mode Scanner

The new VR-500 is more than just a scanning receiver, it's more like a miniature high performance monitoring station! Providing almost continuous coverage of the 100kHz to 1300MHz range, the VR-500 includes reception of narrowband FM, wideband FM (for FM and TV broadcast audio), SSB (for Amateur, CB, and HF reception), CW, and AM (for shortwave and broadcast station) signals. A large backlit LCD screen not only displays the receiver operating frequency, but also displays channel steps and reception mode. For monitoring band activity above and below your current listening frequency, the VR-500 even provides a 60 channel Bandscope to display local activity (within a range of 6MHz max when used with 100kHz steps). A total of 1091 memory channels are provided, with 1000 of these being "regular" memories with alpha-numeric tagging, and the balance being for special features (such as Search band memories, Preset channel memories, Dual Watch memories, and a Priority memory channel). A Smart Search™ function, which sweeps a band and finds in-use channels, allows you to allocate up to 41 memories that can automatically note these active frequencies. The VR-500 operates from just 2 x "AA" size alkaline batteries, and can be connected to an external 12V DC source (such as a vehicle cigarette lighter) using the optional E-DC-5 adaptor. For easier operation, the VR-500 can also be connected to your PC using the optional ADMS-3 interface/software package.

D 2799

YAESU **\$699**



Yaesu FT-90R 2m/70cm micro mobile

Another engineering breakthrough from Yaesu – a tiny-dual band mobile rig with high power output, a remoteable front panel, and a rugged receiver front-end. The FT-90R provides 50W RF output on the 2m band as well as 35W output on the 70cm band, a solid die-cast casing with microprocessor controlled cooling fan for reliable operation, and a large back-lit LCD screen, all in a package measuring just 100mm x 30mm x 138mm.

Also includes:

- Wide dynamic range receiver for greatly reduced pager breakthrough.
- Huge receiver coverage – 100-230, 300-530, 810-999.975MHz (Cellular blocked).
- 180 memories and a variety of scanning functions.
- Built-in CTCSS encode/decode, battery voltage metering.
- Designed for 1200 and 9600 baud packet operation.
- Tiny remoteable front panel (requires optional YSK-90 separation kit)
- Includes MH-42 hand mic, DC power lead, and easy to follow instructions.

D 3312

AMAZING VALUE!

YAESU **\$599**

SAVE \$100



2 YEAR WARRANTY

YSK-90 Front Panel Separation Kit

\$144

D 3317

All Yaesu products listed are priced in Australian dollars, and are not stocked in Dick Smith Electronics stores outside Australia. Check our web site www.dse.com.au for further ordering information.

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Captions Conclude, New Era Begins!

This month, a new magazine begins, and with it, a new contest! The first thing you will encounter in this part of *News Desk* is the final round of caption entries from our final edition of *Whachamacallit Magazine*, or perhaps it was *Thingummy Magazine* — I don't seem to remember.

The final part of this column inaugurates a BRAND NEW concept, unless you remember *Amateur Radio Action* of a few years ago. We call it **READERS WRITE**. In this contest, we ask for the best theory, idea or suggestion to explain a particular topic. Remember, we are looking for ground-breaking ideas here. The winner will receive applause, acclaim, public recognition, and the original artwork of a Kolm cartoon illustrating his or her idea, which will be published alongside the winning entry.

And so to the FINAL winner of the *Caption Contest*. Our last cartoon in *Whachamacallit Magazine* is shown here.

And the finalist entries are as follows:

From **Doug Kraatz** of *North Rockhampton, Qld*:
"Just how long do I have to wait for the NEW MILLENNIUM magazine?"

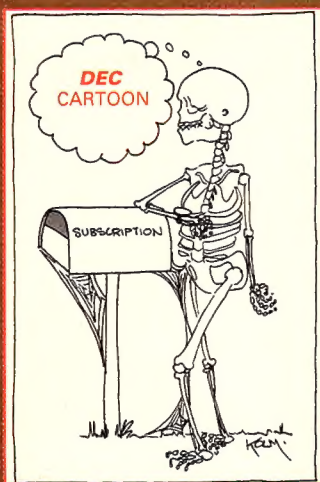
From **Stephen Psaila** of *Fawkner, Vic*:
"My wife said, she sent off the form!! (from wife Lucy)"
"Looks like the boys at R&C are late again!!"
"Should I wait here for my

copy of R&C or should I get to my wedding on time?"
"If I knew it was going to take this long, I would have put some clothes on!!"

From **Andrew Scott** of *Wollstonecraft, NSW*:
"Hang on Mary, My mail order Viagra should be here soon."

From **Glen Faulkner** of *Erskine Park, NSW*:
"Well that's issue #12 of my [magazine] subscription but I'm still waiting on my amateur exam results."

From **Ian Brown** of *Woodburn, NSW*:
"And I thought my tax refund was late."
"#\$@# Australia Post!"
"Send in a subscription, get your R&C Mag early - Yeah Sure."
"Waiting, waiting waiting."
"The Editor said it was in the mail."
"Skip may come, skip may go, I'm waiting for my mag you know."
"My better half said that radio would be the death of me."
"The mail man is a little late today."



"Don't tell me the Pigeon got lost."
"So this is why it's called 'snail mail'."
"Even death can't keep me away from my R&C Mag."

From **Kevin Kenny** of *Banksia, NSW*:
"That's the last time I'll believe the PC when it tells me I have mail".
"Now I know why they call it 'Snail Mail'."
"Hmmm, I wonder if they got my subscription renewal."
"EMR effects on human tissue? Naaa..."
"Well, at least the diet worked."
"I'd like to see them get their 'Pound of Flesh' now!"

From **Joe Fittipaldi** of *Keilor East, Vic*:
"Talk about snail mail !!!"
"It better hurry, I'm getting cold."
"And they said that mail delivery was quicker in the afterlife! Yeah right."
"One more minute and my joints will freeze."

From **Gavin O'Shea** of *Montrose, Tas*:
"How long does it take to get the bl—y survey results.?"

From **Ian Wyatt** of *Wedderburn, NSW*:
"I'm still here waiting for my subscription of Radio and Communications to arrive."
"I did renew my subscription didn't I?"
"I'm getting hungry but I don't want to miss my next issue of R&C."

From **Andrew** in *Horsham, Vic*:
"If I had bought it at my local newsagency I would have it by now!" (Hey, that's cheating! Andrew is a newsagent! Ed.)

From **Rob Marshall** of *Ardrossan, SA*:
"Chris Skase said he would QSL me when he got back to Australia."
"How long does it take to get a club QSL pack from Chris Skase?"
"Internet CB has got a lot to answer for!"
"How long does it take 'Marconi' to QSL."
"They said my QSL cards would be in the next post."

From **James Dabner** of *Brighton, Tas*:
"I have a bone to pick with that editor."
"Australia post must be operating with a skeleton staff."
"I wonder what the bone of contention will be in this month's edition."
"My Issue must be in the dead letter office."
"I hope they have something in this months edition on managing stray RF."

And this month's winner is..

Kevin Kenny with his caption "That's the last time I'll believe the PC when it tells me I have mail".

Kevin wins the original of the Kolm cartoon, with his caption written in by the artist. He will have it by the time you read this... in fact, he would have received it ages ago!

Readers Write

And now (drum roll please) our brand new monthly feature, **READERS WRITE!**

For the inaugural month, you will have noticed that the key staff from *Whachamacallit Magazine* have jumped ship to join Chris Edmondson and a brand new publishing company under the name of Radiomag Pty Ltd. Clearly you HAVE noticed this, since you are now holding Radiomag in your hands.

So this month, what we want to know is this: **What is the best and yet silliest slogan we could use for the new mag and its cargo of contributors?**

Points will be awarded for insanity, humour and creativity, not necessarily in that order. The judge is still me, and correspondence will cheerfully be entered into, but as ever don't expect it to make any sense. Send your entries to: **News Desk, c/- PO Box 270, East Melbourne, Victoria 3002** or — even better — by E-mail to newsdesk@radiomag.com. Don't forget to include your name and address!

The closing date for the *Readers Write* Competition is the first Friday of the month. Any entries received after this date will be pulped and fed to the monster in the basement.

WICEN on the Web

The NSW chapter of the Wireless Institute Civil Emergency Network (WICEN) has a web site at <http://www.nsw.wicen.org.au>. The service is provided courtesy of the Physics department at Macquarie University. WICEN NSW can be contacted on 0408 397 217, or E-mail operations@nsw.wicen.org.au

VK2 QSL Bureau Update

The VK2 QSL bureau is half way through a major posting of QSL cards to members. So, DXers, if you are waiting for a particular card it might be there soon.

New high quality linear amps

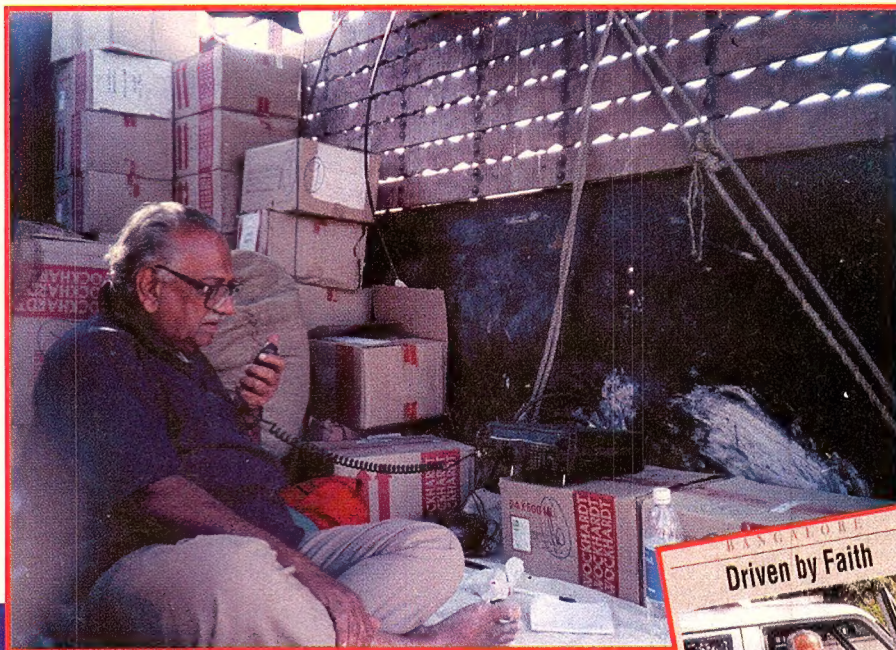
Enhanced Radio Communications has announced the introduction of 'Messenger' HF linear amplifiers.

All amps in the range have a variable output and a receive preamp. Outputs and models range from 125 watts to 500 watts (with only a low input required), and are class AB1 which means they are suitable for AM/FM/CW/SSB. Tests show that they produce an extremely clean output, which is the result of a super efficient, clean, high quality design, coupled with the use of high performance transistors such as 1446s and 2879s.

When he contacted us with this news, ERC's Richard also advised that he has moved to centrally located East St Kilda.

more on Page 45...

Send your news to John Kolm, VK3YJK. E-mail newsdesk@radiomag.com or write to News Desk, PO Box 270, East Melbourne, Victoria 3002



Indian amateurs help out...

Last month's massive earthquake in south-western India is a human tragedy of simply mind-numbing proportions. The images on this page show **Ramiah Ramchandra, VU2RC**, whose efforts to help people in the devastated areas are but a part of a gigantic human endeavour. Humanitarian aid came from around the globe to assist with the more than 100,000 left homeless by the major January quake.



BANGALORE
Driven by Faith
Ramiah Ramchandra is 72. He is also a former United Nations official and an ardent ham radio operator from Bangalore. Post-quake, Ramchandra has decided to drive his Toyota Qualls all the way to Bhuj, 1,700 km away. With the 300 kg of equipment he is carrying with him, he plans to set up a temporary earth station. "A top priority is to establish a communication link between Bhuj and Bangalore," says Ramchandra.



Mobile 'capability' redefined

Turn your car into a mobile radio station with this super radio from **Vertex Standard Limited**. That's right, Yaesu Musen is no longer. Standard and Yaesu have joined forces in the quest to become the paramount name in amateur radio...

By Chris Edmondson, VK3CE, Editor

Sometimes you get the inescapable feeling that someone's done something just right. Since Yaesu adopted a new logo and added the Standard name plate, a lot of things have gone right for the Japanese communications company. This upgrade to an already well-regarded radio puts it firmly in the 'pedestal' class. Not that too many people will put their FT-100D on a pedestal. They'll be too damned busy using them!

If Yaesu were to be completely frank with you, they'd probably admit that their original FT-100 160m-70cm compact transceiver was brought out as an answer to the Icom IC-706 juggernaut, which, in three models, had ripped through the commercial sales arena in a blinding flash. But forget the who and why — the latest FT-100D is one quite amazing piece of equipment.

We first met the FT-100 back in the middle of 1999, when the reviewer for my old magazine took one away for a few days play and work. He came away mighty impressed. I also grabbed it to do a side-by-side packaging comparison with the IC-706 MkII in my car. I came away grizzling about all the leads and cables I'd needed to run before getting on the air. A pity I didn't use the radio longer. The grumbles would surely have turned into smiles before long. With Yaesu's second iteration of the FT-100, the FT-100D, the smiles must be even broader.

Let's take a closer look, and find out why.

What is the FT-100D?

Glad you asked. It's a 'do-everything' for the radio ham, that's what it is. It receives radio signals in all popular modes (including wide-FM) all the way, non-stop, from 100 kHz to 970 MHz, with in-built DSP to make the listening experience as good as humanly possible. To make it even more fun, it also transmits on all amateur bands between 160m and 70cm, also in all modes and with DSP audio tailoring. A speech processor and VOX are provided for SSB users and an internal electronic keyer is provided for CW operation. You get dual VFOs, a removable front panel for remote mounting, 100 watts on all bands to 6m, 50 watts on 2m and 20 watts on 70cm. Oh, and it's small. Actually, it's really tiny, just like the IC-706. We're talking just 160 x 54 x 205 (mm, WHD), although it's a little on the porky side at some 3kg.

What makes this radio different to the original FT-100? In truth, not much. It's now supplied as standard with the TCXO-8 ± 1 ppm high-stability Reference Oscillator, XF-117C 500Hz 8-pole crystal filter, FTS-27 CTCSS decoder unit, and a larger, high output 66mm top-mounted speaker driven by a more-than-adequate 1.5 watts of audio. You can see the difference over the original, as the new speaker sits proud of the case by a few millimetres. And that's about it, unless you consider that the new radio actually debuts for less money than the original one!

EQUIPMENT

REVIEW

YAESU FT-100D



The original FT-100 won friends for its powerful interference-fighting features such as a DSP based Bandpass filter, Notch filter and Noise reduction, together with an IF based Shift control. Factor in the extra bits and you have one powerful piece of gear!

Let's take a quick look at the front panel and microphone control layouts and the rear panel arrangements, then examine how it all goes together. The business end of the radio is dominated by the tuning knob and the large backlit LCD, which, rather than being the conventional black on a yellow background, surprises with dark blue characters on a light blue background. This works well, with good contrast, although I chose to dim the backlighting to its second-lowest level to avoid distraction while driving at night. I set it quite a lot brighter when using the radio in the shack, which is where I sat it for the first couple of weeks. (I'd suggest you do that too, even if you bought it for the car, as there's a fair bit of learning to do if you're to get the most from it.)

The display gives you all sorts of information. The operating frequency is always the centre of attention, but it also tells you things like your operating mode, memory channel, output power, SWR or ALC, and incoming signal strength, operating functions, and so on. In fact, it tells the user a great deal of information, yet, with familiarity, seems able to do so with remarkable clarity.

The tuning knob is ideal for a mobile station. It's far from the 'fly-wheel' you'd probably prefer for home use, being fairly small with reasonable friction, and I found it absolutely ideal for prowling around the HF bands while mobile. There's a small cavity in the knob for fingertip tuning, but I decided it was easier just to run my index finger or thumb around the outside of the VFO knob. As supplied, the tuning rate is quite 'slow', but with seven different step selections available, you can set it up exactly the way you like. Oh, and the settings are individually selectable for the different modes.

The front panel is actually very uncluttered. What you'd generally expect to find on such a complex piece of equipment is either a mountain of controls or very few controls with a multitude of functions. Obviously, this small radio takes the latter path, but the execution is outstanding. A single FUNCTION button steps through nine 'layers' of functions, the legends for which appear on the bottom of the screen immediately above four buttons, marked A to D. One of these 'layers' is for DSP, which also has a 'shortcut' button which lights up in red when any of the DSP functions are active. As you'll read shortly, it does a lot more than that, though.

To my mind, the FUNC arrangements are superb. It's the ideal answer to having sufficient control over the radio's functions without going nuts whacking button after button trying to find that one elusive function to change. You may need to hit the button up to nine times to find the right menu (or 18 if you miss it the first time 'round!), but I think it's probably the most sensible answer to keeping charge of things.

The overall front panel layout is pretty simple. At the far left are two knobs, the top of which is a combined AF volume and (selectable) squelch or RF gain. The lower knob is called 'Select', and it's more than useful. It's a 30-position detented switch, which you use to step through memory channels or the function menu items — but you also use it effectively as a 'channel' knob in the VFO. You can set it to 25 kHz steps over, say the 2m and 70cm repeater channel segments, or 5 kHz steps for the HF broadcast bands. How about 9 kHz steps for the medium wave broadcast stations and 100kHz for the FM ones? Done! The more you use this radio, the more you come to rely on that versatile Select knob.



There's a small pushbutton between the two knobs, which lights up when pressed. It handles the RIT function — the clarifier — as well as IF Shift, both of which are then mated to the Select knob.

The main tuning knob is flanked by five pushbuttons on each side. While these buttons may initially appear small, I actually found that a little familiarity allowed me to find the right ones accurately, even in complete darkness.

Most of the time, anyway, you won't need to use these buttons much, particularly as you can set selected functions to 'slave' buttons on the microphone. Looking at the photos, the functions are mainly self-explanatory, but a couple of quick notes, overleaf, may help.

Getting mobile the simple way...

We could — in fact, shortly *will* — run a special feature on sensible steps to getting mobile on HF from your chariot. But we thought we'd bung in a few quick happy snaps showing what we went through to get mobile with the Yaesu FT-100D from our family buggy, a Toyota LandCruiser Prado.

Firstly, you won't get out too far without a decent antenna of some sort. Thanks to the FT-100D's remarkable frequency versatility, we actually connected a couple of different antennas to use on the road.

Silly billy here ordered the model with airbags, which made it illegal to fit a roo bar capable of holding a substantial HF antenna of any persuasion. Thankfully, the spare tyre is mounted on the back door, and the nice people at Terlin Aerials in Perth, home of the Outbacker brand antennas used on this car, came good with a sturdy bracket which fits right under the tyre holder.

Terlin has these great brackets for any

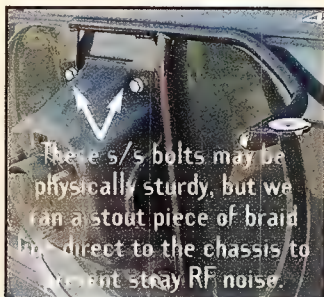
tuning antenna mounted on the bracket. Rather than the standard five-foot steel whip which comes with the tuner, I use a Terlin three-piece fibreglass whip, and this is close to double the length of the steel whip.

Of course, I forgot it was there, and managed to clobber a large overhanging tree branch at highway speed in the bush. Cursing myself, and fearing that I'd broken the antenna or base, I stopped for a look. There, strewn around behind the car, several pieces of broken tree branch told the story. There was no damage on the car at all!

The photo at right shows the Barrett tuner with the Terlin whip — and also gives you an idea how much wind we get up in the mountains! Above that you can see the antenna used with the FT-100D — a Terlin Outbacker "Outreach" antenna, which has startled many amateurs around the globe for its level of performance.



As you can see, the coaxial cable just disappears in through the car's back door. But where does it go from there, and how did we arrange the power to the radio? Turn overleaf to find out the rest of the story!



These 5/8 bolts may be physically sturdy, but we ran a stout piece of braid direct to the chassis to prevent stray RF noise.

You press and hold the power switch to turn the radio on or off. The delay is about half a second, so you're not likely to fire it up or kill it accidentally. Pushing that STEP button does all sorts of things to the tuning rate on either the main dial or the Select knob. The default settings are pretty good, but you may like to experiment a bit. The HOME button won't activate the Star Trek transporter to avoid the traffic snarls, but it sends you to your favourite, preprogrammed channels on selected bands. Some other companies call it a CALL channel. Same diff...

We mentioned the FUNC button earlier. If you press and hold this innocent-looking button, you enter the MENU mode, with a whole world of changes and features at your fingertips. Lurking in here are some 66 user-addressable features. They're the sort of things you wouldn't often think of changing, so Yaesu applied some logic and grouped them all together in here, out of the way.

Some of these features include settings for: • main dial tuning speed (as distinct from tuning step) • scanning settings • 'dual watch' • tone signalling • spectrum scope • DSP settings (discussed shortly) • power and gain settings • filter options • digital mode settings • repeater offsets • Morse Code settings (yes, this tiny radio even features a built-in electronic keyer) • vox operations, and • carrier insertion points.

It's the amazingly adaptable DSP system which may confuse some newbies. In fact, it would be quite easy to totally *stuff* the nice transmitted audio if you really overdid it with these controls. I found the very best audio reports came from simply leaving all that stuff alone. But, for the curious and the determined, there is certainly a lot you can do to the audio, either incoming or outgoing, where many of these settings can help to compensate for a restricted audio range in your voice.

On the air... at last!

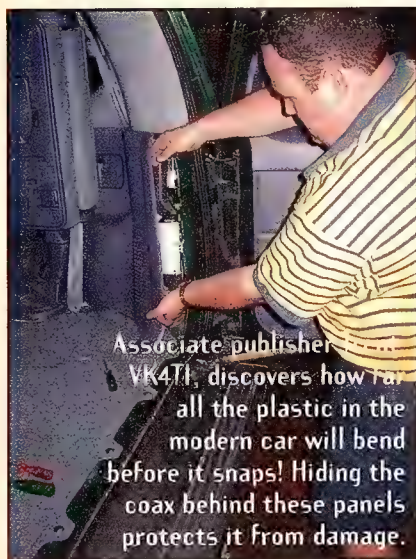
With anything as complex as equipment like this, it would probably make a lot of sense to start by thoroughly reading the instruction manual before going to air. Not that many of us would actually have the patience to do that, of course, but let's pretend for a moment and reach first for the book. Here awaits a major surprise for those of us who tangled with Japanese instruction manuals of the '60s and '70s — it's excellent. No sign of "Jinglish"; clear, well organised prose with absolutely no room for misunderstanding is the order of the day. And when I say 'book', I mean just that. It's a soft-cover book of more than 100 pages.

In common with all recent Yaesu manuals, it starts with a few words of welcome, lists the specifications, then leads into an 'installation' section. This one is particularly good, with a lot of advice and handy information. Somehow, whoever wrote the book has managed to hand over some really basic stuff without it sounding in the least condescending. A top effort.

As I said, I spent some time in the shack with the FT-100D before installing it in the car. It was time well-invested. While 100 watts may be *de rigueur* in an HF amateur box, not all that many of them have 100 watts on six metres as well, 50 watts on two metres and 20 watts on 70cm. That sort of extra power quickly proved its worth on VHF. I was chatting on simplex to a station a couple of hundred km away on two metres FM, and the step up from my usual rig's 20 watts to the FT-100D's 50 watts made the difference between rough and good copy. The good "comms quality" audio made it even easier, I was told.

In fact, on the VHF and UHF FM portions, you'd almost swear you were using a purpose-built monoband FM transceiver.

More getting mobile the simple way...



Okay, with the antenna bracket in place, the next job is to run the coaxial cable safely to where the transceiver itself is located. In our case, that meant getting all the way to underneath the driver's seat. This location was chosen simply so that the radio could not get in the way of cargo — or kids — in the back of the car. As the CD stacker is located under the front passenger seat, the choice was made simple. The rear seat is completely removable, by the way, meaning that location was simply not an option.



Once the coax has passed safely through the rear section, it's then simple to run it under the carpet alongside the transmission tunnel to the transceiver.

Many remote-controlled radios can suffer from all sorts of nasty noises when in transmit mode, and sometimes even when in receive, and *nothing* you do seems able to overcome it. Try this trick: do *not* run the cable which runs from the radio to the control head alongside either the power or coax cables. Do make sure the transceiver itself is adequately earthed to the chassis of the car. It needs to be securely bolted down for electrical reasons as well as safety ones!

And do make absolutely certain that the base of the antenna itself is very securely earthed to the chassis as well. The bottom line is simple: *anything* you can earth to the car should be earthed! Do not rely on the power lead to provide you with an adequate RF ground. It keeps the radio alive, of course, but poor earthing is the prime cause of undesirable noises called RF Feedback.

Next you need to worry about getting the DC to your radio. I hope it goes without saying that you don't try to connect an HF transceiver — *any* transceiver for that matter — either to a handy cable under the dash or to the cigar lighter or accessory power connector. Don't even bother trying that! The cables need to go directly to the battery. Note below

how we have run the earth lead to the chassis and the positive lead direct to the battery itself.

We'll have a special feature on better radio installations coming up soon!



The squelch is crisp and clean, the transmit audio tops. I've used other "do-all" radios which really let the side down when on, say, two metre repeaters, with crook squelch operation which disappointed. Not so the FT-100D. It really excels at the higher frequencies, and that hot receiver is a real boon. Step over to the 'point one' segments on SSB, and it's a repeat story. The reports are first class.

As I write this, it's very early on a Saturday morning. I'm listening to a couple of chaps yakking on two metres FM simplex. They're happily oblivious to me, despite my having a full 50 watts to call them with, even though they're both showing a very stable S1-2 here on the mountain-top inland from the Gold Coast. No wonder the signals are weak. They're in Bundaberg, some 300km away.

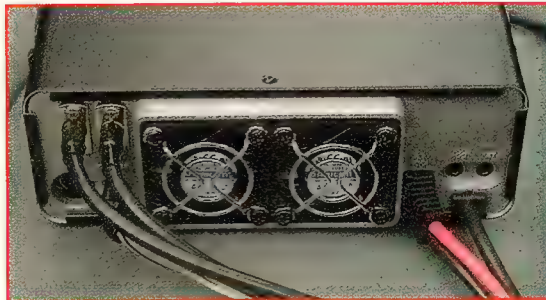
Living right at the peak of a pretty pointy mountain (the rough equivalent of Melbourne's Mount Dandenong, Adelaide's Mount Lofty, or a bloody great balloon suspended over Sydney) it didn't take me long to discover this radio was good enough to ditch the tri-band Diamond amateur jobbie and try the discone for the mandatory "UHF sweep". I still had the trump card up my sleeve — I hadn't yet hooked up the HF antenna!

This receiver is brilliant. If I was into listening to everything (which I pretty much am) and didn't have an amateur licence, I'd still be more than happy with a radio like this. Okay, you can buy receivers which soar into the multi-GHz range... but how many scanner owners do you know who can *really* hear anything at a couple of GHz? It takes a pretty special sort of antenna to work effectively up there. From the scanist's point of view, in my book it's a real and useful bonus that this radio goes right up to 970MHz, because it actually *works* up to there. Its performance over such a very wide range was surprisingly consistent, with many signals to rival the scanner's performance the order of the day. Its memory system of more than 300 memory channels also rivals many scanners.

And finally, with hands rubbing together, we got to use the HF side of things. From the outset I would have liked to have had a nice antenna tuning unit hooked up. These latest compact radios all seem to have one thing in common: they don't like SWR mismatches, not even fairly small ones. And my HF antenna for the test was as sharp as a needle, with very narrow 'sweet spots' plumb in the middle of the bands. Yaesu offers an automatic tuner which mates nicely to this radio. The FC-20 is a tidy little tuner which suits the FT-100D down to the ground. (In a later test, I hooked up one of those after-market ATUs designed for random wire antennas, and the FT-100D took to it like the proverbial duck to water. Even though output power is savagely cut back on mismatch, it was still enough to run the tuner.)

If you use one of the older solid state radios which didn't have an auto tuner built in, and upgrade to the FT-100D, one of the first things you may notice is that your antennas suddenly seem to have developed a very narrow bandwidth. It's an annoyance for those of us with a less-than-optimal installation, but I'm afraid that this radio is not the only culprit here. All of the most compact radios seem to exhibit exactly the same behaviour.

I used the FT-100D in the shack for a couple of weeks before installing it in the car. It seemed quite at home, well, at *home*, but in this environment you always seem to feel it's not quite where it belongs. If you were considering this radio for home use only, I'd prob-



ably be inclined to suggest you look at the FT-847 instead. It's physically bigger, which gives it more presence, and that extra size makes it a little easier to use. And it covers all amateur bands to 70cm, just like the FT-100D. I'm not saying the FT-100D is hard to use. Far from it. But the FT-847 is possibly a more appropriate machine for the shack.

Where the FT-100D *really* shines is in the mobile. My tests saw the Yaesu installed in the family LandCruiser Prado — and this presented us with a little dilemma I'd not anticipated when ordering the car. Ours is the model with ABS brakes (which I reckon are vital for a vehicle which spends most of its time on steep mountain roads subject

to very heavy rain) — and if you get ABS in these things you also get airbags. The problem is that airbags make it illegal to use the sort of roof bars suited to carrying antennas. Instead of the heavy alloy bar I expected, it was delivered with a poncey little plastic-mounted 'nudge bar' which looked about as strong as a lump of plasticine.

I'd almost given up all hope of operating HF mobile from the Prado until Terlin Aerials came to the rescue. They make a very sturdy bracket which mounts under the spare tyre holder on the back door of the car. The HF antenna sits very high there, clear of the bodywork, but with the base very effectively grounded. For VHF and

UHF I installed an old-fashioned gutter-grip antenna mount just behind the trailing edge of the driver's door.

Used with the Outbacker Outreach antenna, reports for the FT-100D were every bit as good as those through the coax from the base station. My first contact was Jabor, A71BY, from Qatar (QSL PO Box 432, Doha) at 0117z on 20 metres while driving around the Gold Coast, earning an S9+ for the effort. A couple of NSW and Victorian stations also made the contact, but earned no better reports. In fact, some were lower! That's pretty amazing for a mobile station. Blame the superior location and the monster Outbacker...

Elsewhere in this report, you can see some pictorial results of our testing of this radio. It would be fair to say we were pretty impressed with the results. In the written part of this review, we've concentrated on some of the things this radio can do, rather than the RF performance, but the bottom line really is very simple: for the active radio amateur wanting a superior HF mobile rig which doubles as an all-mode VHF/UHF box *and* a mobile scanner, check this one out.

In summary...

You could make a long list of strong points for the FT-100D. If it has weaknesses they are more than compensated for by a level of versatility not even dreamed of only 10 years ago.

You may never use all of the memories, the auto range-finder, the built-in keyer or even the spectrum scope. But gee, it's nice to know that these features, and literally dozens like it, are there as standard and easily accessible to you. You *will* use the DSP features, marvelling at the noise reduction and audio tailoring, and you will be in awe of its remarkable adaptability.

Yaesu called its 1999 first-release FT-100 the "Field Commander". I wonder if this updated one should be called the "Field Marshal"?

Radiomag thanks Dick Smith Electronics for the supply of the FT-100D review radio. We kept it. They got a cheque instead... **R**

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YAESU

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The winners will be drawn at random from the database of subscribers by a representative of the publisher on Friday, June 1, 2001 at the publisher's office. Winners will be notified by phone and registered mail. The prizes will be delivered by courier to each winner's recorded address. Refund cheques will be posted to each winner's recorded address. RRP prize values as of February 16 were FT-817 \$1495, VX-150 \$345, UH-040XR \$99.

Wham Bam Ham Exam!

moffat's
madhouse

"Imagine a scene from a Cold War horror movie. One poor soul, accused of some nefarious activity, bound to a chair in the middle of the room. In front of him, a tribunal of judges, all scowling down on him. The judges want answers, and now!"

By Tom Moffat, VK7TM / KV7TM
E-mail madhouse@radiomag.com

Once a radio ham, always a radio ham. I tried to give it up for a while, five years in fact, since my Australian licence didn't work in the USA. If you're a US citizen like me, you can't operate here under a licence from another country. I suppose that's to prevent potential US hams from hopping over the border into Canada or Mexico in hopes of an easier licence test. Anyhow, the day I set foot in this place, five years ago, I was off the air, ham-wise. I had a ham rig with me — an Icom IC-24AT VHF/UHF hand-held, which I used only as a scanner on non-ham bands. Becoming legitimate again meant I had to go right back to square one, and sit both the code and theory exams. To tell the truth, I couldn't be bothered. And every time I heard about an exam session, it had already passed.

Then a local radio club placed an announcement in the newspaper, advising of a ham licence exam session some five weeks hence. So I put a note on my calendar, and promptly forgot about it. But... the exam was scheduled for a Wednesday night, and when the previous weekend rolled around, I thought: Well, why not? Nothing to lose but the \$6.65 entry fee. (The maximum mandated by law is \$6.66, or $\frac{2}{3}$ of ten dollars. Why? Who knows...?)

I had been licensed previously for many, many years, and also held a First Class Commercial FCC ticket, so I thought a ham licence would be a piece of cake — just walk up, fill in the answers, and collect my callsign. But, just in case, I thought it might be prudent to at least try a practice exam on the internet.

And here I discovered I was doomed to failure. I knew the radio theory all right, but in the thirty years since I last sat a ham exam, the regulations had changed dramatically. Frequency allocations were different, procedures were different, licensing was different, and there were whole new areas of concern such as how to prevent frying you and your neighbours with RF. This is one of the new paranoias that the litigious Americans have embraced with vigour.

In the USA the amateur exams were recently restructured to make them somewhat easier than before. One suspects the motivation for this was the lure of computers and the internet which don't require any exam at all, yet achieve many of the goals of ham radio.

There are now three grades of US ham licence — Technician, General, and Extra. You work your way up through the grades by passing a series of exams called 'elements'.

Element 1 is a Morse Code test, now simplified to five words per minute for everyone instead of the 20 WPM top speed formerly required by Extra class.

Element 2 is a written test covering rules and regulations, safety, and basic electronic theory. This earns the Technician licence, very similar to the Limited licence in Australia. Adding the code test gives the Technician licensee some HF band privileges.

Element 3, a little more difficult, results in a General class licence, and adding Element 4 earns the Extra class, the top of the heap.

My plan was to see how far up the scale I could go in one sitting, so I decided to prepare for all the elements. There are some really good web sites that administer on-screen practice exams from the FCC's question pool, multiple-choice, paper marked at the end. So I set up a system of taking three element twos, followed by three element threes, followed by three element fours, learning from my numerous mistakes.

This method produced fairly constant progress so that I was getting scores in the eighties every time. On the afternoon of exam day, I changed the order of things to more resemble the real exam. I began with some computer-generated Morse Code practice at seven words per minute, which for me is fairly slow — but I wanted to get used to the rhythm of the slower speed. Then I did the three written exams in order; elements 2, 3, and 4. I repeated the whole process three times, with rest breaks in between, and a couple of hours before exam time I declared myself 'ready'.

American ham exams are conducted by volunteer examiners — a panel of three in fact, to guard against any hanky-panky. On this particular evening there were only two exam candidates, and one fellow who needed some administrative changes to his licence. The other guy was there for the code test only, to upgrade his Technician licence. So the two of us put on headphones and got into it. He bombed, but I made it through the code fairly easily. Then everyone left except for the three examiners, and me.

Imagine a scene from a Cold War horror movie. One poor soul, accused of some nefarious activity, bound to a chair in the middle of the room. In front of him, a tribunal of judges, all scowling down on him. The judges want answers, and now! Well, that's how I felt. The three examiners, all lined up at a table, and me facing them, quivering, pencil in hand. They wanted answers, now. To be exact, 120 answers for all three elements.

It wasn't really too bad; the study had certainly helped. I'd learnt the rules and regs in Element Two so, combined with some basic theory, that was a breeze. As each element was finished the examiners marked it on the spot, using a plastic template that highlighted the correct answer choices. Answers that didn't match the template got bright red marks from the examiners. I passed Element Two with ease.



Element Three was more of the same, with slightly more intense electronic theory. Again, no problem, thanks to the study effort. And finally came the big whopper, fifty questions of Element Four. This was decorated with spooky things like Smith charts and oscillator circuit diagrams. But once again, study had helped, and I launched into it with confidence. The hardest parts were near the start, but after question 30 or so it was easy cruising, and I was certain I'd passed.

All three examiners crowded around for the marking of Element 4, to see if their one candidate was going to shoot the works all the way from nothing to Extra Class. Apparently it had happened only once before. I watched the red pen — a mark here, a mark there, but not too bad. Then, around question 30, it went mark-mark-mark... several questions missed in a row. These were the ones I was certain I'd aced, but now I was closing fast on a disastrous failure.

But after seven missed questions it all came good; the rest were perfect. So I'd passed Element Four with two questions to spare. Then one examiner said "Isn't this interesting — every one you missed along here was one to the right of the correct answer." And then the penny dropped — with all the jostling from the other examiners, the template had slipped one notch to the right! Since I'd passed anyhow I didn't make a big deal about it, but it was certainly a close call. I wonder if the examiners would have agreed to re-mark that exam, or if I'd have been forced to sit another one? Anyhow, it's all done now, and I am the holder of an Extra Class licence — KV7TM. Along with my Australian call, VK7TM, a matched set!

So what can you do with a nice fresh ham licence? For me, not much, because most of my ham gear is still back in Australia. I had that one VHF/UHF portable, but the 70cm part was useless in the USA because they use a different part of the band for FM and repeaters. As



well, old age was getting to the radio, and it became less and less reliable, sometimes reluctant to start when first switched on. The phase-locked loop would refuse to lock until you blipped the transmit switch a couple of times. Then, when monitoring a frequency, the PLL would sometimes die again. The radio was at least ten years old — even its leather case was falling apart. So guess what? I HAD AN EXCUSE TO BUY A NEW RADIO!

What I ended up with was an Icom IC-Q7A which is basically an IC-R2 scanner that talks on the ham bands. It's the size of a pack of cigarettes, runs off two AA 'penlite' cells, and puts out 300 milliwatts when it's feeling good. It's not the latest model over here, so it came at the right price: US\$139. Go ahead you readers over there, drool!

Since the radio is so tiny, it doesn't have the bulk to support any decent-sized antenna. So it spends most of its time sitting in a coffee mug, which supports the radio with its antenna, and also works as a snazzy acoustic amplifier for the radio's tiny speaker. It looks a bit silly but it works. The only danger is accidentally placing the radio in the wrong coffee mug — one that's still loaded with coffee.

The 300 milliwatts works wonders in the USA, because we are well served by two metre and 70cm repeaters on prominent mountain tops. Americans are also very keen on linking repeaters together, so it's nothing unusual to talk into my tiny cigarette-pack thing and raise somebody in Spokane, 600km away, on the other side of the state. And just the other day I was sitting here at my desk with the radio idling away in its coffee mug, when some guy in Honolulu came up looking for a contact.

Hawaii on 300 mW? That's half-way to Australia almost. But I'm sure there were some interesting satellite and fibre-optic links involved. This stuff never ceases to amaze me. It's good fun being back in ham radio, and there are so many new things to learn, all over again...

WELCOME TO MADHOUSE!

Welcome to *Radiomag*, the new home of *Moffat's Madhouse*. This is the same column that ran for ten years in *EA*. Now changes have made it necessary for *Madhouse* to find new digs, so here we are — a brand new, sparkling fresh magazine that came along at just the right time. *Madhouse* can continue its run, unbroken.

So what are we on about? No particular agenda; electronics and technology are the main themes, but sometimes we tend to stray, too. As I stagger through life I keep my eyes open until the little in-brain light globe comes on and says "that looks interesting". And another *Madhouse* column is born.

Nothing is sacred. I have lost count of how many times targets of *Madhouse* columns have demanded my dismissal! The cellular telephone industry, when I reported that cellphones might cause cancer. The rude marketing association, when I made rude comments about unsolicited phone calls. Other cages I rattled include the aviation industry and traditional medicine. Brave editors fended off the attacks, and *Madhouse* survived.

Now, after a five-year absence, I'm back into ham radio, and that promises a whole new series of adventures to write about.

I've always been fascinated with low-power operation, and my current status as a flat-dweller will force me to operate in stealth mode, or portable. And there are all these new digital modes to play with!



Like most of you, I'm into computers, making part of my living as a consultant. I buck the trend here too, finding all kinds of ways to short-circuit the Wintel behemoth, software bloat, privacy concerns, reliability, and all the other issues that have grown around what used to be a good fun hobby. My desk features an out-dated Sony laptop, surrounded by snarls of interfaces and cables and radio stuff. *Madhouse* equals Mad-Mess, but fun stuff emanates from it. Stay tuned.

Moffat's Madhouse comes from a USA perspective; I've lived on the Olympic Peninsula of Washington State for the past five years. You remember the old Dad and Dave stories of the 1930s? Well, the USA equivalent is Ma and Pa Kettle, subject of some glorious movies, and their real-world home is about 30km from where I'm sitting. Backwoods? You betcha! (See the photo...) But it suits me. It's a lot like Tasmania here; Seattle (the big smoke) is commutable in a day. But an inconvenient stretch of water, Puget Sound, keeps them from overwhelming us.

Joining *Radiomag* is really a step back into the eighties when editor Chris Edmondson ran *Amateur Radio Action* magazine and I was a regular contributor. We even met fact-to-face occasionally, in a big messy office near the Melbourne Age.

And that car! Chris had this enormous yank-tank with busted shockers that wallowed along like a boat in rough seas. It was festooned with antennas of all types and descriptions, from HF through UHF. A rolling porcupine, actually. The whips would sway like grass in the breeze, and when Chris went around a corner the antenna farm would sway right out over the footpath, impaling any unwary pedestrians. Now Chris tells me he's replaced the yank-tank with a BMW. Well, classy, sure enough, but certainly not as unique. Perhaps it needs some more antennas...

TECHNICALLY

• Speaking •

By Ron Bertrand, VK2DQ
P0 Box 123, Eagle Heights, QLD 4271
E-mail: ron@radiomag.com

Part 1: Understanding Antennas and Transmission Lines

A note from the Editor: *TECHNICALLY SPEAKING* is written by a technical wizard with a great deal of experience in educating people wishing to learn about electronics. It is aimed specifically at those who wish to learn more about radio, perhaps in studying for an amateur licence. This is **your** column. It could help with all sorts of things. And where better to start than antennas?

Some of the real magic in radio is done with transmission lines and antennas. There are many mysteries and myths surrounding this topic. Over the next few issues we will be covering all of the basic fundamentals of transmission lines and antennas. We won't be going into any heavy maths. The object of this series will be 'understanding' first principles. Who doesn't use antennas and transmission lines? We all do! Radio amateurs, SWLs, HF mobile network users, scanner users, Cbers, everyone. This series will be 'not too heavy, not too light — just right!' Goodness, haven't we heard that somewhere before? So join me and, over the next few issues, we will work together through some of the most interesting and often misunderstood concepts. Things like characteristic impedance, SWR, how antennas radiate, tuning antennas, stubs, lots of applications and tips and tricks.

Where to start? Well, many radio hobbyists love learning about antennas, however much of the material available does not cover first principles very well. Many references are more about doing things with antennas and transmission lines than actually understanding how they work. So there's one task.

You may be surprised that I have grouped transmission lines and antennas together. These two are inseparable. In particular, an understanding of antennas cannot be had without an understanding of transmission lines first. You see, antennas are just a development of transmission lines.

So this is where we will start: **transmission lines** — often just referred to as the feedline, wire or cable connecting a transmitter or a receiver to its antenna.

What is a transmission line?

Generally speaking, in radio, a transmission line connects between a transmitter or receiver and an antenna, and its purpose is to transfer the signal power to or from the antenna. A perfect transmission line would do this without introducing any losses and it would not radiate (transmit) or receive any energy.

This is a simple definition. In this series you will discover that transmission lines can be used for other very interesting purposes. The terms, transmission line, feedline, feeder, line and cable will often be used interchangeably and refer to the same thing.

Transmission lines can be categorised into three basic types. Two of these are shown, opposite, in Figure 1. Parallel line is harder to install and so is not as popular as the coaxial type. However, parallel line has great advantages when it comes to low loss. The once very popular 300 ohm TV ribbon is a very good example of parallel line.

It is a good thing that coaxial cable has replaced ribbon on most TV installations. However, this is not because coaxial cable is better, rather that coaxial cable makes unskilled home installation possible. The other type of transmission line not shown is the waveguide. Waveguides are used at ultra high frequencies and above and will not be covered in this series.

Characteristic impedance of a transmission line

When an electromagnetic wave travels through free space, the current and voltage distribution of the wave settles into a particular ratio. In free space the current and voltage distribution of an electromagnetic wave settles into the ratio E/I or 120π or 377Ω .

So we say the characteristic impedance (Z_0 — pronounced 'Zed-Oh') of free space is 377Ω .

For many it is difficult to imagine 'free space' as having impedance. Just remember that impedance is just a ratio between voltage and current; $Z=E/I$. In free space, the electric and magnetic fields (corresponding to E and I) of an electromagnetic wave is always a given (E/I) ratio giving 377Ω .

When discussing transmission lines and antennas it is best to begin thinking of impedance as a voltage current ratio E/I rather than the impedance of a 'thing'. It is better to begin thinking of impedance as a 'place' or 'position' determined by the E/I ratio at that place or position.

Free space is infinite. To define the term 'characteristic impedance' of a transmission line it is best to consider the line to be of infinite length. Imagining the line to be of infinite length also means we can ignore, for now, what is connected to the end of the line (the load). Because the line is infinitely long nothing will ever get to the end of it so the load is irrelevant.

When a wave travels along transmission line (or an antenna) of infinite length the current and voltage distribution of the wave will settle to a particular ratio E/I and this is called the characteristic impedance (Z_0) of that line.

That's it! If you were to buy an infinite length of 50 ohm coaxial cable (of course, you would be spending an infinite amount of money and make a retailer infinitely happy) and connect a transmitter to it and measure the E and I along the line at **any point** you would get the ratio E/I of 50 ohms.

So for a particular transmission line of infinite length, we could transmit a wave into it and then literally measure the voltage across the line at any point and the current through the line at that point — and the ratio of E/I would give us the characteristic impedance of the line in ohms.

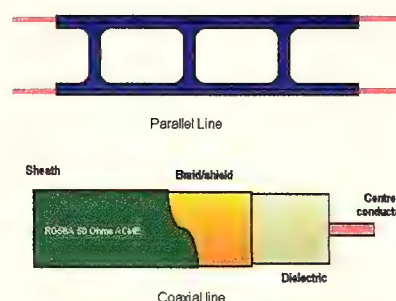


Figure 1 - Popular transmission lines

What is a transmitter's 'load'?

When you connect an antenna directly to a transmitter then the 'load' for the transmitter is the antenna. We use a transmission line to connect a transmitter to an antenna located elsewhere. The load for the transmitter is no longer the antenna; it is the transmission line's input impedance, which under most circumstances will be the same as the characteristic impedance (Z_0).

We will speak of the transmitter or generator as the source of energy in this series. However, keep in mind that when an antenna is receiving a signal it is the antenna that is the source and the receiver that is the load. The idea is quite simple: get the energy from the source to the load without changing it in any way, without losing anything along the path.

You may recall from previous study that it is important in radio to match the source and load impedances for maximum power transfer to occur. This is why we can't just pick any old cable of any impedance to connect an antenna to its tra either 50 or 75, 300 or 600 ohms. There are others. These are just the most common impedances. In a TV receiver system 75 ohms is very common. Not surprisingly, then, the impedance at the socket where the cable connects to the TV is 75 ohms and also at the other end at the point where the feedline connects to the antenna the impedance is 75 ohms.

When is a 50Ω transmission line really 50Ω?

At first this may seem like a very silly question. After all, if you purchased 50Ω transmission line you expected to act like 50 transmission line, right? Unfortunately, whether or not 50Ω transmission line behaves like 50Ω transmission line depends on how we use it. Just because it has 50Ω written on its side is no guarantee that it will behave as 50Ω line, because this up to us to ensure.

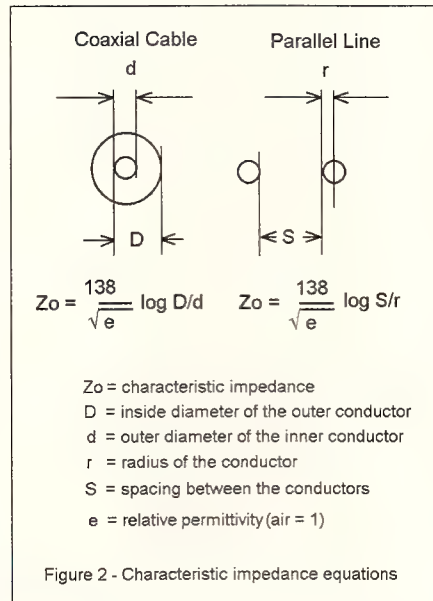
A transmission line will only exhibit its characteristic impedance when it is terminated in its characteristic impedance. A cable with a characteristic impedance of 50Ω will behave like it is 50 ohms when it is connected to a load consisting of 50Ω of pure resistance.

If a transmission line is terminated in a load not equal to its characteristic impedance then the impedance on that line will vary from one point to the next along its length due to the presence of reflected waves. We'll talk about reflected waves shortly. So if you buy or make a cable of, say, 300 ohms, then it must be connected (terminated) in a load and a source of 300Ω. Each end must be connected to 300 Ohms or the cable will not behave like it has a characteristic impedance of 300Ω.

This does not mean that you cannot connect a 50Ω cable to other impedances. You can... as long you understand the consequences.

Factors that determine the characteristic impedance

The characteristic impedance of any transmission line is a function of the size, spacing and shape of the conductors, and the type of insulating material (dielectric) used between them. Figure 2 shows the equations for finding the characteristic impedance of coaxial and parallel lines. There may come a day when you may make your own line, particularly parallel line. You could use this equation then. Parallel line is very inexpensive to make and has far lower losses than coaxial line. However, the downside is that parallel line is a lot fiddlier to install.



Even if you never use these equations, they tell you that the characteristic impedance is determined by the physical dimensions of the line, its shape and type of insulating material used.

If the distributed inductance and capacitance per unit length of a line is known, then the characteristic impedance can be found from:

$$Z_0 = \sqrt{\frac{L}{C}}$$

You could actually measure the distributed inductance and capacitance per unit length, or look up from cable data what the L and C of a cable is for, say, a one metre length. Using this L and C you can calculate the Z_0 . You could do this is if you wanted to find the Z_0 of an unknown line. There are easier ways, though, and these will be covered.

If you think about it, inductance and capacitance are determined by the size, shape and spacing of the conductors, so there should be a relationship between them and the characteristic impedance.

Ranges of Z_0

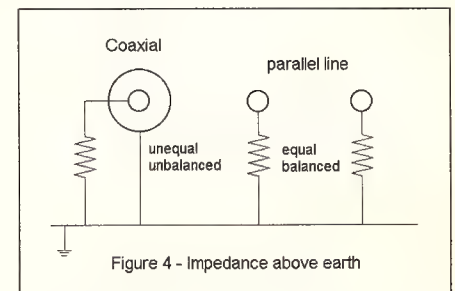
In the design of transmission lines there are certain constraints which restrict the range of practical impedances that can be achieved. For example, if the spacing between the conductors is not sufficient then the amount of voltage the cable can withstand is reduced. For two-wire parallel lines, the Z_0 is usually restricted to a range of 100 to 600 ohms. For coaxial lines, the practical range of characteristic impedance is typically 30 to 100 ohms.

Interestingly, it is no accident that in radiocommunications transmission, a Z_0 of 50 Ohms is most common. For receive-only systems, though, 75 Ohm cable more common. The reason? It can be shown by measurement or by maths that 50 Ohms is the best compromise between power handling ability and loss.

Loss is how much the signal is attenuated by the cable measured in decibels (dB). On the other hand, 75 ohm cable is optimised for low loss with no regard to the power handling ability. So small signal power systems like receivers are better off with 75Ω cable. Actually with some modern cables there is not a lot in it any more. When I built my first home I pre-installed, as the house was being built, 40 kilometres of 50 ohm cable. I used 50 ohm cable for Amateur Radio, TV and Video. The consequences of the mismatch created by using 50 Ohm cable on a 75 Ohm TV system are insignificant. (Okay, so it wasn't really 40 kilometres — but it was a lot!)

Balanced and unbalanced line

On a balanced line, such as a parallel wire line, the impedance between each leg of the line above the earth is the same. This line is said to be 'balanced'. On the other hand, a coaxial line has a larger outer concentric conductor with a small diameter conductor through the centre. Because of this construction, it is impossible for each leg of the line to have the same impedance above earth. A coaxial line is said to be 'unbalanced'.



If you find this concept hard to understand, imagine placing an ohmmeter between each side of a parallel line and ground (as in dirt, earth). You will measure a very high resistance (impedance) in the meg-ohm range. However, you will measure the same value between each leg and ground. This line is balanced.

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Because a parallel line is balanced (when installed correctly) it does not radiate or receive any signal like an antenna. Currents in the balanced line flow in each leg of the line at the same amplitude and in opposite directions, and therefore cancel everywhere except within the cable itself.

This is why a twisted-pair (telephone line) or even 300Ω ribbon is so often twisted. That is, in order to maintain this balance between each leg and ground.

A coaxial line, on the other hand, has its centre conductor at megohms above ground while the shield (outer conductor) is at ground. It's definitely an unbalanced line.

A two-wire parallel line such as 300Ω TV ribbon will 'behave' as balanced line only if installed correctly. In a TV installation, this line must be held away from metal structures such as the antenna mast by using stand-offs. If this were not done, the metal structure would unbalance the line and alter the characteristic impedance.

A correctly-installed 300Ω TV feeder is twisted at least once every 150 mm, or six inches. The purpose of this is that each side of the line is 'influenced' to the same degree by nearby objects such as metal storm water down pipes. Attaching 300 Ohm ribbon to a wall using thumb tacks driven into the centre of the dielectric is absolutely out for the same reasons. (Don't laugh, I have seen it done many times). The latter practice is commonly found in domestic TV installations and frequently leads to poor reception and interference.

Balanced line is difficult to install and maintain the balance between each leg. Having said that, parallel balanced lines have much lower losses than coaxial ones.

Why be concerned? If a balanced line is installed correctly, then induced currents from your amateur transmissions will flow in opposite directions on each leg of the TV line and be equal in amplitude, thus completely cancelling out and greatly reducing the possibility of interference (the same reason a parallel line does not radiate when used on a transmitter). If, however, the line is unbalanced it will function more like a long wire antenna and funnel your radio signal into the TV set, increasing greatly the chances of interference.

A coaxial line is unbalanced by virtue of its non-symmetrical construction. At the transmitter it is usual to connect the outer conductor to ground. The cable can be run anyway you like and can even be buried in the ground (preferably in conduit). The induced voltages in the shield are conducted to earth and do not affect the shield/inner-conductor circuit.

Velocity of Propagation Vp

In free space, an electromagnetic wave travels at light velocity, or 300 million metres per second. This is as it should be, as light is an electromagnetic wave. However, when an electromagnetic wave is fed through a transmission line it is slowed. How much it is slowed relative to the velocity of light in free space is called the Velocity Factor (Vf). If a wave propagates through a line at 50 per cent of light velocity, then the velocity factor is 0.5.

The velocity of propagation is the speed with which an electromagnetic wave travels through a transmission line. The velocity of propagation within a line depends on the construction of the line. In particular, the dielectric used can significantly alter the velocity of propagation. Manufacturers of transmission lines described the velocity of propagation by stating the velocity relative to the velocity of light (or any other electromagnetic wave) in free space, commonly referred to as the velocity factor. The velocity factor can range from 0.56 to 0.95 depending on the type of cable. Most coaxial cables have a velocity factor of 0.66; this means that the wave can travel along this line at 66 per cent of light velocity, or about 198 million metres per second.

Some typical velocity factors are:

1. Parallel line, air dielectric 0.95-0.975
2. Parallel line, plastic dielectric 0.80-0.95
3. Coaxial, air dielectric 0.85
4. Coaxial line, polythene dielectric 0.66

The most important ones to remember for most hobbyist purposes are 0.66 for coax and 0.80 for 300 ohm parallel line. If you use something else, look up the velocity of propagation on the manufacturers data sheet.

There is an interesting approximation for determining the velocity factor of coaxial lines. The reciprocal of the square root of the dielectric constant is a close approximation of the velocity factor. Polythene has a dielectric constant of 2.3, so a coaxial line with a polythene dielectric has a velocity factor of $1/(\sqrt{2.3}) = 0.659$ or 0.66 rounded.

Do we really care how fast waves travel along lines? After all, it is so very fast... does it really matter? Yes, it matters a great deal. A wavelength in free space is $= c/f$. In other words, it's the velocity of light divided by the frequency. You are probably used to seeing the equation written as $= 300/f(\text{MHz})$.

The wavelength is the distance a wave will cover during one cycle, or during its period $1/f$. The figure '300' in this simple but very important equation comes from the speed of light. But wait! In cables we have learnt that the velocity is slowed considerably. Therefore the distance a wave will cover in its period is reduced. The wavelength is not as long (in metres) as the free space wavelength. The velocity is also slowed along an antenna as well. When we design transmission line and antenna systems we measure and cut our

antennas and feedline in wavelengths. This may not appear obvious at first as often a design equation is used to convert the measurements in wavelengths to metres.

Here's a better generic equation for wavelength that takes into account the velocity of the wave: $= 300/f(\text{MHz}) \times Vf$, where Vf is the velocity factor. For example, Vf is 0.66 for most coaxial cables and 1 for free space. Vf is about 0.95 for most antennas.

As we look at transmission lines and, later, antennas, it is important to keep in mind that things just don't happen immediately. Fast, yes! Right now? No! Time is involved. The time taken for a radio signal to go from a discone antenna to a receiver may be very short indeed, in fact almost too short to imagine. But there is a time when the signal has just entered the cable. There is a time where it is half way. There is a time when it is one micron (one millionth of a metre) from the back of the receiver. So you won't be surprised now when we talk about a radio signal in a progressive way. When the distances become great, the delay becomes easier to comprehend. Communications via satellites begins to show that electromagnetic waves, though extremely fast, still take a finite time to reach their destination, no matter the medium through which they travel.

A line terminated in its Characteristic Impedance

We have a generator (transmitter/source) connected to a transmission line. The impedance of the generator is the same as the impedance of the line (say 50 Ohms). The line is terminated in its characteristic impedance of 50 Ohms. See Figure 5, below.

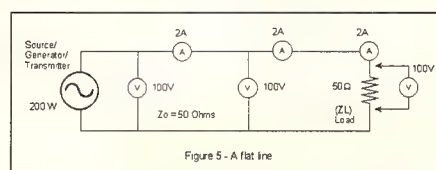


Figure 5 - A flat line

We transmit a wave into the line. The wave begins to travel down the transmission line, but has not yet reached the load. We will presume that it is half way right now. Remember, a wave travels at a finite velocity, some fraction of the speed of light. As it travels, its current and voltage distribution or ratio E/I will be equal to the Z_o of the line. The wave has not reached the load as it is still on its way down the line. The current and voltage distribution of the wave must obey Ohms law.

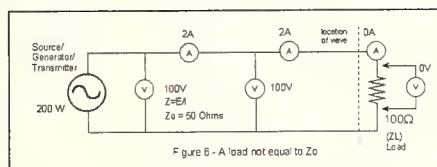
At any point along this line, if we were to measure the voltage and current distribution of the wave and divide them we would get the ratio E/I as equal to 50 Ohms.

When the wave reaches the load (that is equal in impedance to the Z_o) it will be totally dissipated in the load or radiated if the load is

an antenna. Such a line is called a *flat line*. The term 'flat line' just means that wherever we measure the voltage or current along the line it will be the same. Suppose the current in the line was 2 Amperes and the voltage 100 Volts – this gives $100/2 = 50$ Ohms. Neglecting the effects of line attenuation, a voltmeter (or ammeter) placed anywhere along the line between the generator and load would measure the same. If you made a graph of the voltage along the line plotted against the position along the line you would get a 'flat' or 'straight' line.

A line not terminated in its Characteristic Impedance

Now let's imagine the same situation over again. This time, however, the load is 100 ohms. The generator is 50 ohms. The feedline is 50 Ohms. See Figure 6, below.



We turn the generator on and a wave begins to travel along the line. As before, we will imagine that the generator is supplying 100 volts and 2 Amperes into a 50 Ohm line (200 Watts).

As the wave begins to travel along the line, the generator has no idea what the load is going to be. The moment the wave leaves the generator and enters the very first section of transmission line, the generator will 'see' the characteristic impedance of the line.

The current and voltage distribution of the wave will conform to Ohm's law, E/I , so it will be $100/2$, or 50 Ohms, and all is well. As the wave screams down the line at 0.66 light velocity it will pass the half way mark. All is well at that point, and the impedance is 50 Ohms.

Can you see that it would not really matter what the load was at this time? We know it's 100 Ohms, but the generator still doesn't. It could even be an open or short circuit, and the generator would not know. It can't know, because its messenger, 'the wave', is happily conforming to Ohm's Law.

When the wave is one micron from the load (or any infinitesimal measure you wish to use) it is still conforming to Ohm's law. The

voltage component of the wave is 100 volts and the current 2 Amperes.

The wave arrives at the load! Aarrk! Can we have 100 Volts across and 2 Amperes through a 100 Ohm load? R or $Z = E/I = 100/2 = 50$ Ohms. It cannot be, it cannot happen. George Ohm would be most unhappy. There must be a sudden and dramatic redistribution of the electric and magnetic fields of the wave. The voltage and current across the load must redistribute themselves to conform to Ohm's Law. Ohm's Law is just that — a *law*. Not an 'if you feel like it or not'...

In going through a redistribution of current and voltage, an induced current and voltage wave (Faraday's law of induction) is created, and this new wave opposes the wave that created it (Lenz law). The induced wave will now begin to propagate through the line back towards the generator or transmitter (Sod's law). This is called a reflected wave. How much of the 'incident' wave is reflected and how much is dissipated (or radiated) in the load is determined by the amount of mismatch between Z_0 and the load impedance (Z_L).

Again — a wave, before reaching the termination (load), has no knowledge of the termination conditions. The wave's current and voltage distribution will be representative of the characteristic impedance of the line. As close as one micron (a millionth of a metre) away from a load, the wave is still unaware of

the conditions at the load. Suddenly, upon reaching the load, an instantaneous change in impedance occurs; the voltage and current must now redistribute themselves to conform to Ohm's law value established by the load. This rapid redistribution causes an induced reflected wave that travels back down the line

from the load.

A line *not* terminated in its Z_0 will have an incident or forward wave and a reflected wave travelling in the opposite directions.

That's all for this month. We'll continue on and look from here next month by looking more at lines with reflections and SWR — and what that *really* means. I'd like to leave you with a thought: Now that the wave has reached the load and has been partly absorbed and reflected, does the generator 'know' what the load impedance is? See you next time. E-mail questions are welcomed regarding this series and will be answered if possible in the letters to the Editor.

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Editorial Comments

...from Page 5

Robert J Padula OAM. No, that OAM isn't a radio callsign, it's a gong for service to shortwave radio. How do you get one of them? A good starting point is probably a head full of static, but you never can tell. Bob brings to Radiomag an amazing wealth of knowledge and the best little black book of international broadcasting contacts you could imagine. Compelling stuff indeed!

Frank Calabrese. Lurking somewhere out west aways is a fellow who made the silly mistake a long time ago of buying a scanner. Didn't anyone tell him how addictive it could become? While scanner users in almost every country hide behind locked doors, Australia welcomes the scannist in the most fundamental way: it is legal to listen to *anything*, as long as it's not carried along the public phone network. If you want to know something about scanning, ask Frank... And that's precisely what we invite you to do!

Arthur Andrews, VK2AAE. Andy, as he's so often known, spends most of the time with his head in the clouds. Well, quite some distance above them, actually! He's a satellites specialist. Not the 'service van' type but the sort whose curious but determined home dabbling developed into something of a passion. Why use a boring old phone when you can talk to your son through an orbiting ham radio satellite? If it's up in orbit, Andy can tell you a lot about it.

Kirsty Jenkins-Smith, VK9NL. How does a Norwegian mariner end up marooned on Norfolk Island, sort of half-way between Australia and New Zealand? Heck, I dunno. Maybe she crashed her boat into it! Kirsty is an accomplished amateur radio virtuoso. Think of some far-flung speck of rock in the middle of nowhere — even smaller than Norfolk, if that's physically possible — and she doubtless knows someone stuck on it. And she will have talked to them via her ham radio gear, that's for sure. Kirsty's amazing specialty is the history of the hobby. It's compulsive reading, as you'll find.

Alex (Tex) Ihasz, VK1TX. Stewth! Is this bloke a man or a machine? I'd bet Tex worked into more countries on amateur radio in his first week than most of us in our first year. He's not held his amateur ticket for 10 years yet, but he cracked the incredible 300 countries barrier ages back. And now, so help me Bob, he just *retired*. Watch out for loads *more* DX action from Canberra. The 'hot air' quotient just got upped...

John Batty, VK4MBK. So what do you do when you retire from the Armed Forces? Simple. You buy a nice radio or two, an E-mail computer system, and a house in the quietest radio place you can find, then put half the annual output of a major wire factory high up in the sky. Why? Nope, not to talk to people. It's so you can keep an eye on your former charges, of course! John is our Utilities man, and I don't mean your local power company. You'll see...

Mike Lambert, VK4VZK. Some people collect stamps. Others collect buttons. So what's Mike's failing? He collects *modifications*, for pity's sake. Lots of them. CD-ROMs full of them. So if you can think of a radio, *any* radio, Mike knows how to mod it. And now we've set him loose on you, the unsuspecting. Stand back and watch the master at work! Ask nicely. He'll have one for you...

Judicious Rex. Who is this masked avenger? There are many who stride the hallowed corridors of power who would *really* like an answer to that question! Rex is a legal practitioner who was forced to don the cloak of anonymity when he first wrote about his incurable dose of

the radio hobby in old ARA yonks back, simply because law people couldn't then advertise their services, you see. But that cloak has proven a valuable ally in the many intervening years! He tackles the thorniest of subjects, and doesn't mind if he tramples crook legislation in the process... Rex has for many long years regularly been seen at major radio events such as the **Wyong Field Day**, the biggest radio "do" in the hemisphere, at which we launched this publication. In fact, we expect him to come down to our official launch proceedings. So which face in the crowd is he? Sadly, thanks to his high-profile work commitments, he could not join us in print this month, but he will be back in Australia in time to write for you next time.

Ian Godsfil, VK3VP. Some radio enthusiasts chase cards. Some of them want awards. Some merely seek the companionship. But Ian's thing is a good joust! Yep, radio contests. We're not so sure if that really means pitting a Jumbo against an ass, as his logo suggests, but some testers are just like David versus Goliath! Check it out.

John Kolm, VK3YJK. Kolmy's in the business of getting people motivated. He exudes the unflappable aura of the consummate professional from every pore. Okay, so now go watch John in a radio fox hunt... John's **Radiomag** role is to plough through the dross looking for the news. But he's completely irascible. You'll soon find

that out for yourself when you sample *Readers Write* or the *Last Word*. Protect the wife and kids! He's on rampage once again...

Steve Gregory, VK3OT. I've known this bloke since I was a teenager. Way back in the late 1970s, a column by Steve appeared in the very first issue of the long-gone magazine *Amateur Radio Action*, which I joined as Editor half-way through the 1980s. And here he is in the launch issue of Radiomag. You'd have thought he'd have learned by now. Steve is internationally recognised for his many remarkable achievements on the capricious six

metre amateur band. A raconteur of fine DX, is Steve. He earned Australia's first one hundred countries DXCC award on a band which had long been acknowledged as for local contacts only. His efforts in ARA did a lot to promote the popularity of the band, too. Over the years, Steve has participated in many DXpeditions, radio trips to far-flung spots indeed. We welcome Steve, a man of incomparable experience.

Ron Bertrand, VK2DQ. Heck, how could you summarise this remarkable man in a couple of sentences? Ron is driven by a remarkable thirst for knowledge. Add to that a genuine gift for explaining complex concepts in clear language and you have one gifted educator. Ron retired early from a career as a government Radio Inspector, and now has even more time to put his mind to helping people to understand electronics. Thanks for your very real help and encouragement, mate!

Who else? Well, gee, how about *you*? As good a group as the above folk are, we are always interested in seeing new faces here! If you have an idea for a story, or even a regular column, please don't let it languish at the back of your mind! E-mail, write, phone or fax the Editor! We'd be delighted to hear from you.

Don't miss the fantastic opportunity to win one of six great radio prizes as a part of our **Double Discount Deal** for subscribers. You'll find all the information on Pages 14 and 15 of this month's issue.

That's more than enough from me. We warmly welcome you all, and look forward to a long association! On behalf of the entire editorial team, good luck and 73 from Chris Edmondson, Editor. **R**

"He exudes the unflappable aura of the consummate pro from every pore. Okay, so now go watch him in a radio fox hunt..."

EMTRON

DX-3

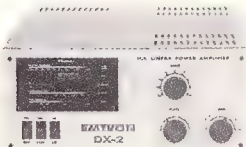
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EPS-20ST

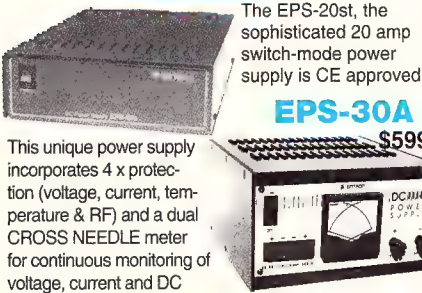
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AC-108

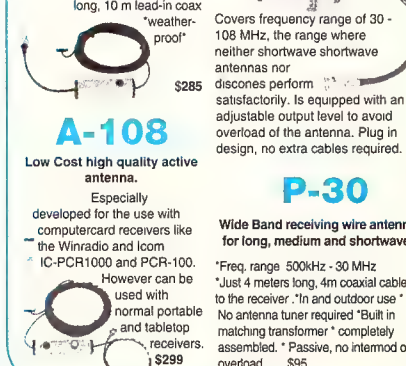
Antenna combiner for Wideband receivers and scanners. **\$155**

A-108

Low Cost high quality active antenna. Especially developed for the use with computerized receivers like the Winradio and Icom IC-PCR1000 and PCR-100. However can be used with normal portable and tabletop receivers. **\$299**

P-30

Wide Band receiving wire antenna for long, medium and shortwave. *Freq. range 500kHz - 30 MHz *Just 4 meters long, 4m coaxial cable to the receiver. *In and outdoor use *No antenna tuner required *Built in matching transformer *Complete assembly. *Passive, no intermod overload. **\$95**



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SATELLITES *et al*

By Arthur Andrews VK2AAE
satellites@radiomag.com

Well, as I forecast in my last article for our old magazine, we have indeed 'risen from the ashes' — and I extend a hearty welcome to our faithful readers of old and to our new readers.

People who have come across my writings before will have noticed that we have changed this column's heading to *Satellites et al*, which reflects this column's wider view of everything to do with recreational satellite listening.

Talking exclusively about weather satellites would be too restricted for this new millennium, as WXSAT numbers are declining. Whilst WXSATs will still be an important part of this column, I am going to extend the horizon to include such things as amateur satellites, remote imaging, interpreting weather satellite images and even maybe look at what weather instruments are available and other related subjects.

Disaster after disaster seems to be dogging the two new NOAA weather satellites NOAA 15 and 16. NOAA 15 now appears to be permanently incapacitated and incapable of transmitting good images either on the HRPT or APT transmitters. Now and again it does produce some good images but for the most part they are distorted or non-existent. The NOAA/NESDIS engineers are still working on the problem but so far they have had no luck.

A bigger blow is the current trouble with the recently launched NOAA 16. This satellite was transmitting excellent APT images up to the time they were switched off in October to avoid clashing with NOAA 14 when their radio footprints overlapped.

Enthusiasts worldwide bemoaned the fact that it was NOAA 16 that was switched off and not NOAA 14, and perhaps in retrospect it would have been better if it had, as, when it came to the time to switch NOAA 16's APT back on, there was nothing. Well, in fact, there was *something*, but the signal was so weak no intelligible image could be discerned.

Although the cause of the malfunction is not known for sure, it is thought it may be a faulty relay switch.

At the moment the engineers are trying to cycle the transmitter on and off at regular intervals to see if they can rectify the situation, with no luck being experienced at the moment. Hopefully by the time you read this, the problem has been solved.

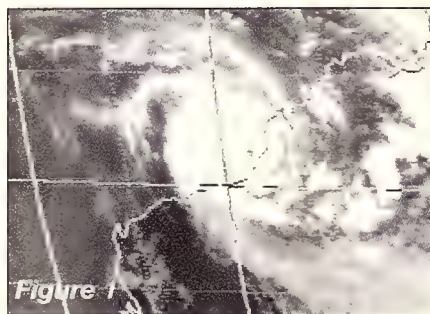
The loss of this satellite would certainly be a blow to enthusiasts, especially to us in Australia, as its mid-afternoon orbit makes it ideal for good earth imaging. HRPT transmissions are not affected and continue to give excellent images. Anyone who archived the APT images when they were transmitted should keep them as they will become a rarity if the problem on NOAA 16 cannot be rectified.

Someone asked why can't the Shuttle go up to these satellites and one of the crew members give them a good belt with a 10lb hammer to get them going properly again. Whilst I think this is a good idea — it definitely works on the farm most times — I am told that the Shuttle is not designed to orbit at that height, so that puts pay to that idea.

The future is not too rosy for APT users at the moment, because if NOAA 15 and 16 remain non operational we are left with only the ageing NOAA 14 and the even older NOAA 12. The next NOAA satellite with APT is not due to be launched for some time.

The news on the Russian front is even bleaker with *Meteor 2/21* about to go belly up and *Meteor 3/5* beginning to show its age. It looks like there will be no more Russian satellites transmitting APT in the future which is a big loss as their APT images were very good.

GMS 5, even though it has passed its use-by date, continues to provide good pictures. At the time of writing the first tropical cyclone of the year, Cyclone Sam, is spinning off the West Australian coast near Broome. It has been rated as Category 5 which is the highest rating that can be given. **Figure 1**, below, is a GMS 5 image of Sam on December 8 about to cross the coast near Broome.



Satellites to talk to...

With the gradual decline of useable weather satellites, my interest is now turning to the many amateur satellites that are available to enthusiasts. Even if you're not an amateur, you can still receive a variety of signals from these satellites, and who knows it may spur you on to sit for your ticket.

I am a complete novice when it comes to AMSATs (amateur satellites) and it will be a whole new learning curve and maybe readers will learn from my mistakes. Maybe someone from *AMSAT Australia* will do an article or two to help us on our way...

UO-14

My experiments commenced with UO-14 which is currently active and is in effect a flying repeater. It is a Low Earth Orbiting (LEO) satellite and makes two morning and two late evening passes which last between 13 and 17 minutes depending on the particular pass and your location. It can be worked quite easily with a dual-band hand-held!

On my first try I talked to my son Nigel, VK4FNA, in Boonah, Queensland, using my Yaesu VX-5R whilst standing in the back paddock. I was amazed how easy it was! Since then I have talked to ZLs and stations in Queensland, NSW, Victoria, South Australia and Tasmania. On western morning passes, as the satellite climbs above the horizon, the satellite is jammed with Asian voices, presumably from Indonesia. The two metre band appears to be open slather there, it being used by taxis and all and sundry. This interference soon drops out as the satellite moves further over Australia.

The uplink to the satellite is 145.975 MHz FM and the downlink is 435.075 MHz FM, and it's this higher frequency which can be so easily monitored by scanner operators. One thing I learned very quickly was the steady change of the receive frequency due to the effects of the Doppler shift.

I found the best way to maintain good reception was to tune the receiver to 435.080 MHz: when the satellite first comes over the horizon and decrease the frequency in 5kHz steps every three minutes or so. I usually end up on 435.055 MHz. The Doppler effect on the uplink is not so drastic and I don't normally change the transmit frequency.

A rubber ducky HT antenna, though it does work for a limited time, is not ideal for horizon-to-horizon working. Some amateurs use tracking antennas for the best results, but a normal vertical will be quite adequate in most cases: providing it has a clear look at the sky. A dual-band high-gain base antenna would be better, although mine mounted 40 feet up from the ground, does not work at all due to Galah attacks on the co-ax. I will just have to wait until I get some help to get it down.

I dug out an old discone antenna which I used in Sydney for scanner work when I lived there. I found that it had an SWR of 1.5 on both 145 and 435 MHz so I have mounted it just above the roof line for both transmitting and receiving, and it works very well. Of course, a satellite tracking program is needed to know when UO-14 is coming over. Give it a try, it's fun.

AO-40 — P3D

We recently read elsewhere a good coverage of the new amateur flagship satellite P3D, or AO-40 as it is now known. This satellite is still in transfer orbit and will not be fully operational for some time.

However, one thing that can be received already is the telemetry beacon which continually sends information on instrument temperatures, voltages, currents, battery performance and a multitude of other housekeeping readings. In addition, messages from AMSAT control are also included in the telemetry giving information on the latest developments of the mission. During this transit orbit, and also when it is placed in its final elliptical orbit, the satellite is in view of Australia up to 12 hours a day, which gives you plenty of time to experiment.

The only post-launch problem discovered with the satellite thus far is that the 70cm link on which the beacon telemetry was to be transmitted is not working. Further tests will be carried out in the near future when the high-gain antennas can be deployed. Hopefully, this will solve the problem, as the loss of 70cm would be a major blow. Due to the difficulties, the telemetry has temporarily been switched to the 2M link.

The first thing I had to find out was whether I could hear the telemetry transmissions which are 400 baud PSK format. To receive this, an all-mode VHF transceiver or a scanner capable of receiving USB, is required.

I hooked up my receiver to the trusty discone and tuned to 145.898 MHz USB... and nobody was more surprised than me when I heard the beacon, faintly but clearly. Considering it was over 35,000 km away and I was using a basic non-directional antenna, the results were impressive.

Hearing it proved to be simple, but how to decode it was a problem as I did not have a 400 bps modem and had no idea where to get one anywhere. I decided to visit the various AMSAT sites on the Net and gained a lot of information on P3D. There was even a list dedicated to P3D decoders!

From this I found that an Italian amateur, Nino Porcino IZ8BLY, had developed a 400 bps PSK program which used the computer's soundcard as the demodulator, the first time to my knowledge that this had ever been tried. I eagerly visited Nino's web site at <http://iz8bly.syonline.it> and downloaded it.

My first attempts to get it to run were unsuccessful due, I think, to memory problems. I subsequently shut down other programs running in the background and hey presto it

loaded correctly. I tuned to the telemetry signal and immediately found that was very difficult to tune the signal to the right pitch for decoding to begin, especially as the signal was

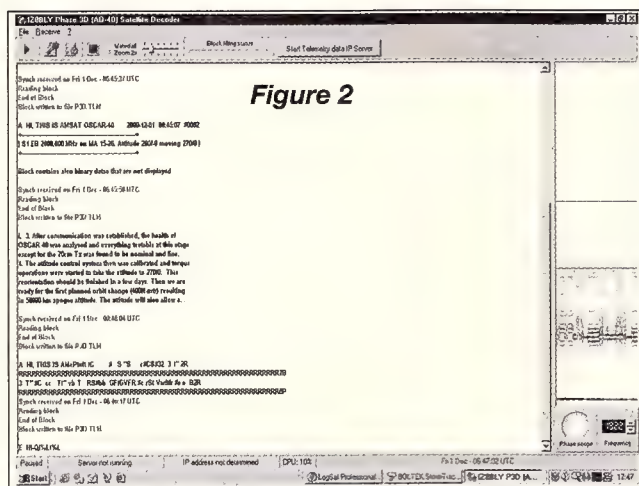


Figure 2

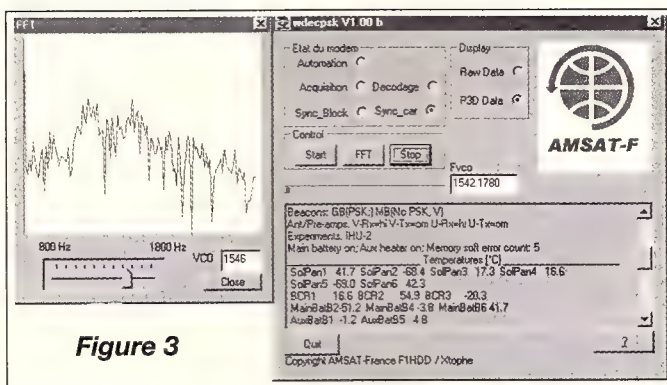


Figure 3

rather weak. After much sweating and swearing, I finally locked on sync and, magically, words began to appear on the screen. Figure 2 at the top of this page shows my first attempt at receiving the telemetry using his program.

It is essential to have a rock solid stable receiver, as even the slightest variation in frequency will result in garbled text. The telemetry is transmitted in frames consisting of 256 characters in ASCII followed by a further 256 binary values. The limitation of Nino's program was that, whilst it decodes the ASCII characters real time, it does not decode the binary data which contains the housekeeping data. It does, however, store the binary data in a TLM file where it then can be decoded by another program called TLMDEC. This worked well but it did take a bit of time.

Shortly after mastering Nino's program I saw that AMSAT France had developed a soundcard program which decodes both ASCII and binary in real time on the screen. This I had to see!

I visited the AMSAT France home page at www.ccr.jussieu.fr/physio/amsat-france/epage1.htm and proceeded to download their WPSKDEC program. No trouble was experienced in loading it and I was ready to go within a few minutes. I found the software easier to use than Nino's and it appeared to be more sensitive in decoding weak or fading signals. Once it locks on the housekeeping details are decoded and shown in the small bottom panel — see Figure 3 — which does not show much detail at any one time but this is not a worry as it stores the entire received data in a TXT file which can be easily read or printed out using Notepad, Word or similar program.

Figure 4 is a cutting from Notepad showing a portion of the text file concerning housekeeping as captured by WPSKDEC. Although this program is free you can also register it for a small donation of \$US10 to AMSAT France.

I don't know what they will do with the ten Australian pesos that I sent them...

A description and specifications of the AO-40 telemetry can be found at www.amsat-dl.org/p3d/tlmspec.txt.

Well, that is about all for the first edition of our new magazine, and as always I welcome any readers' questions, criticisms or \$100 bank notes contained in a plain brown envelope, preferably the latter. Cheers 'til next month. Feel free to send E-mail or write to me at 'Hazeldean', 57 Araluen Lane, Wollar, NSW 2850

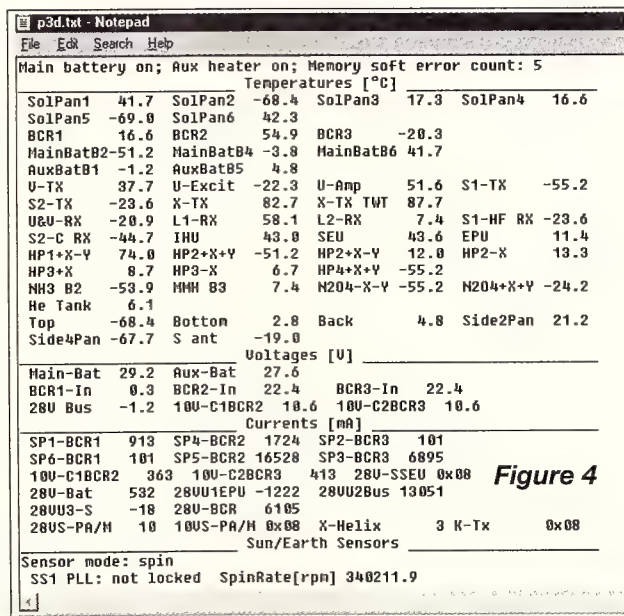


Figure 4

Hi, and welcome to the first of many editions of Frankly Scanning. (Don't blame Frank; I picked the name! Ed.) I hope to bring you each month some of the latest news in the world of scanning. Quite a bit of the news this month is Western Australia-centric, as that's my home state, but, of course, our readers are rather far-flung, so I need your help in both gathering the information about your area, as well as requests for the information you need for your area. So if you would like to see anything specific covered, or if you have any information that you would like to share, please feel welcome to E-mail me at frankscan@radiomag.com.

Okay, let's get into this month's main topic.

The big news for WA Scanning enthusiasts during the last few months (70cm amateur users too for that matter!) is the introduction of CADCOM, which somehow stands for The Call Taking, Computer Aided Dispatch and Related Communications Project, which will be supplied to the WA Police Service by a consortium.

We quote from a 'Printrak' media release which was at press time located at <http://spatialnews.geocomm.com/dailynews/2000/may/24/print.html>:

'Printrak is an integral part of the consortium comprised of the prime contractor, British Aerospace Australia (BAe), and other subcontractors Simoco (providers of a trunked mobile radio system), and Plessey (providers of a digital voice management system that will coordinate radio and telephone traffic within the communication center). The new CADCOM Service Center will take the place of the existing call-taking, dispatch and communications services of the WA Police Service emergency call center, (which is currently being constructed at the old Westrail Midland Railway Workshops) and replace it with an advanced state-of-the-art emergency call-taking and dispatch operations center supported by Printrak's Premier CAD system.'

The main aspect of this revolutionary system is the use of a Tetra Trunked Digital Radio System which will be located in the 420 to 430 MHz band previously used by amateur operators — thus effectively denying amateurs access to this band, and scanner users the ability to monitor police communications! The system is expected to be up and running by October 2001, and both the new system and the current analogue radio network will be simulcast to enable the ironing out of potential problems, and to enable all vehicles to be equipped with the new radios and other gear required.

In the interim, there has been a major overhaul of the callsigns used by the WA Police Service which were introduced at 6am on Monday, February 5, 2001. According to information found on the WA Police Service's website and published in the *Police Beat* magazine, the reasons for the change were as follows:

- The current callsign system is 'full' and there's no room for expansion.
- It is difficult to determine which district or station a callsign is based in.

All change for WA Police Service

- A new format had to be designed to support the new technologies that CADCOM is based upon.

The new callsigns consist of two letters and three numbers in the format District (one letter), Station (one letter), Duty Type (one digit) and Vehicle Number (two digits). So, for example, the previous Sierra 435, which was a General Duties Van based at the Midland Police Station, will now be known as HM102 — H (Midland District) M (Midland Station) 1 (General Duties) 02 (second vehicle in the fleet).

Special sections of the Police Service will also have their own callsigns in a similar structure to the system above. For example, the Major Incident Group (MIG), which was previously known as Division 79 and had the old callsign prefix of Delta, is part of the Crime Investigation Support Portfolio. The cars in that squad now have a callsign which consists of its 'district', which would be 'C' and its part of the Major Crime Division which is the 'station' of 'D'. The Major Incident Group takes the duty type of '5', so the first car in that division has the combined callsign of CD501.

The information was also published on the Western Australian Scanner Users Group website (with which, by the way, I am heavily involved) which you can find at <http://www.warsug.cjb.net>.

A full list of the callsigns appeared on the WARSUG site within 24 hours of their introduction and were compiled from a very detailed list provided from a reliable source. As I am writing this article, it has been almost a week since the new system's introduction and, from listening to VKI, it seems to me that, despite a few teething problems and uncertainty over who is who — solved by VKI having a master list of callsigns cross referenced to the vehicle's registration plates — things are rapidly sorting out. Currently, none of the vehicle fleet have had their callsign decals changed to reflect the new calls,

Scanning and the internet

There are many ways the scanning freak can obtain information regarding this fascinating hobby. There are the traditional methods — such as reading this magazine or by purchasing various publications on scanning, including frequency guides — or there is the Internet.

You will in the accompanying piece on the new WA Police CADCOM communications system, that I quote extensively from information sourced from the internet. As you may be aware, the internet is a useful tool for both the radio enthusiast, as well as the casual user. I am not going to go into a long discourse on what you can use the net for, as there are a myriad of articles/magazines etc, which cover that area, but what I am going to write about is how the net can assist scanning enthusiasts in the day-to-day enjoyment of our hobby.

First of all, the scannist's main use of the internet is to locate those elusive frequencies.

so for now you can still see on the road vehicles displaying callsigns such as S 420 etc.

Day One of the new system was given a virtual 'baptism of fire'. There was a flare up of a major bushfire at Neerabup, located in Perth's northern suburbs, and all cars from Joondalup were dispatched to the fire scene to assist with traffic control and evacuation of residents from the area.

According to a report written by 'Zebedee' on the WARSUG website on the first day of the new system, "There was a small amount of confusion heard on the radio as some callsigns were duplicated and other callsigns weren't known at all, but it was all sorted out pretty quickly as the need for consistent communications was urgently required."

During the course of the day, as the emergency unfolded, both the cars and VKI were starting to take shortcuts in the new callsigns when they were in a hurry — for example, many cars were dropping the first character from the call — so November Whiskey One Zero One would become just Whiskey One Zero One, and so on.

There was a concerted effort to stick to the 'official' callsign pattern as much as possible, as it was after all the first day and it was highly likely that senior officers were monitoring to ensure that it was going to plan. However, many cars occasionally slipped and reverted to either their short-hand call or, on odd occasions, their old callsigns. Another regular mis-call involved station staff who would refer to themselves on air as 'so-and-so base' instead of their new official callsigns.

First impressions of the new callsign system as used in the metropolitan area, where CADCOM will be mainly used, indicates that the new callsigns are actually quite easy to follow. The format of the system sees each district and station given its own unique letter to create the callsign.

In addition, each class of vehicle and/or squad has its own sequence of vehicles, so General Duties are all 100s, Traffic cars are 200s and so on, and this scheme is replicated state-wide. By doing a bit of mental matching of districts, stations, vehicle types and fleet numbers, you should be able to keep track of vehicle movements in your area, and notice when 'out of town' units come in to assist.

There are several methods involved. The first is to use your favourite **search engine** such as Yahoo or whatever, and typing in the relevant keywords which may assist in your search.

Another method is to subscribe to the various radio-related **news-groups** which include several overseas-based groups like **alt.radio.scanner** and **rec.radio.scanner**. Unfortunately, I have found those groups to be cluttered by "flame-wars", which involve certain individuals having the online equivalent to a pub brawl, but besides that, you can find a lot of general information about your particular brand of scanner and other, non Australian-specific information.

On the other hand, if you are looking for a newsgroup with an Australian slant, then you could look no further than **aus.radio.scanner**. This group is ideally suited for we Aussies as it contains heaps of information on scanning in Australia. I'm afraid I've not been able to find a similar newsgroup for our friends across the Tasman, but perhaps some of you may care to write and sort me out on that one!

If you wish to share your interest in your hobby with other like-minded people in a real-time situation, you can achieve this by my preferred method of using **IRC**, which is short for Internet Relay Chat, which is a real-time bulletin board system where the messages are visible to all as they are 'posted'.

There are many IRC networks which have radio channels, but the one I like most is found on the **Giznet** IRC network, which has a webpage at <http://www.giznet.com/irc>. This is a fairly new network set up by Darren Allen and is the home of several radio-related channels, covering amateur radio, scanning, marine radio, and even DX and utility listening. There is a channel dedicated to this very publication which is owned and run by fellow columnist Stewart Wilson.

Along with Stew, I can generally be found on the following channels using the nickname of **Frankscan**: **#radio_scanner**, **#radiowaves**, **#Radiomag**, **#TheMonitor** and **#Navarea10**.

On these channels, you can find fellow scanner enthusiasts discussing frequencies, scanning tips and, most importantly, the real time

dissection of events which are happening in their local areas. Two of these channels — **#radio_scanner** and **#radiowaves** — specialise in scanning matters in Western Australia (but anyone is welcome) and have discussed and discovered several incidents of illegal operation over the police radio network. In fact, members of **#radio_scanner** have had several real life meets at scanning related events and have formed close friendships, both on and offline.

Scannists listen to their receivers, not talk into them. You have to wonder if, just perhaps, deliberate interference like the instances we've heard, are a good enough reason for the police to decide to move to digital communications... even if it takes a lot of the fun out of this perfectly legal hobby of listening!

The message for scanner users is clear. While the internet attracts a lot of negative publicity for being a haven of all manner of undesirable things, it can be a most useful ally. The scanning enthusiast can use the internet as a vital tool in their enjoyment and appreciation of the hobby.

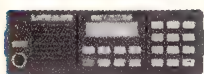
Okay, that about wraps it up for my first column in *Radiomag*. In coming issues we'll canvass all sorts of interesting things, ranging from hints and tips for better listening, through frequencies to watch in different parts of the country, to reader letters and E-mails.

Through this magazine, scanner users across the Pacific have a wonderful opportunity to provide help each other though an effective outlet and forum to both obtain scanning information, and to contribute their own information for the betterment of our hobby.

And now, it's over to you. What would you like to see in the next issue? What questions do you have? What specific frequency information are you looking for? Please feel very free to write to me, either by mail care of the Editor (PO Box 123, Eagle Heights, QLD 4271) or by E-mail to frankscan@radiomag.com. Or, of course, fire up the mIRC or IRCle software, and climb aboard for a new experience!

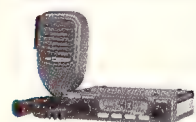
See you again next month!

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A new year, a new magazine, a new column... here's hoping the best for all of them, and for all of you. With a glance at the loggings at the end of the article, many of you will know the kind of listening discussed and reported here; for those who don't yet, welcome and please read on for a brief explanation.

We mainly concentrate on military SIGINT. A simple definition of Signals Intelligence would be knowledge distilled from a combination of Communications Intelligence (COMINT) and Electronic Intelligence (ELINT). COMINT is obtained from the analysis of intercepted voice traffic; ELINT is obtained from the analysis of various kinds of data, electronic warfare emissions and other non-voice signals.

Governments around the world spend billions on the gathering and processing of SIGINT, and they are extremely good at it. The USAF just received a massive boost in SIGINT funding, the RAAF is increasing its SIGINT capability with the addition of AWACS platforms; it is one of the areas of military spending undergoing huge growth worldwide. But if you have an HF communications receiver and a scanner, and a taste for listening to a somewhat different kind of station to the big shortwave broadcasters or the local fire department, you've got just about all you need to get a buzz out of military and utility monitoring; armchair SIGINT!

Thousands of people around the world listen to the mil/utes, not to mention the just plain unidentifiable signals which occur, cause a flurry of hobby interest and analysis, and then, sometimes, disappear again. One of these cropped up recently and was christened "The Slot Machine", because it sounded for all the world like some maniacal Vegas slot machine about to pay out. It appeared seemingly simultaneously on four frequencies, 6417, 6445.1, 8588 and 8704kHz, and was very roughly triangulated to somewhere in Asia, probably mainland China; close intercontinental monitoring of the signal and of propagation showed it to be two separate stations, sending the same signal on two frequency pairs.

Military and paramilitary stations can be heard throughout the HF bands and up through VHF and UHF, using clear and encrypted voice, CW, RTTY, fax and other data modes. Some Over The Horizon Radars (OTHRs) can still be heard on HF; one cropped up recently on 6865kHz. There are hundreds of known frequencies, thousands of identified callsigns; of course, frequencies and callsigns often change, but where known they will be given here.

You can find yourself listening to anything from an Australian Army helicopter in NSW to a nuclear-powered aircraft carrier in the Atlantic; a patrol boat off Timor to an airborne tanker over Japan.

Polar resupply missions are monitored on satellite, and manned Space Stations on VHF. Sometimes you even find you're listening to the SIGINT gatherers themselves. And then there are the mysterious "Spy Numbers Stations", a fascinating field all of their own.

Utility stations include coast stations, weather stations, beacons, fax, RTTY, CW, data, civil Air Traffic Control, ships at sea, almost anything which isn't military, broadcasting or commercial. Obviously, the more unusual the station, the more difficult the catch, the better. These stations, as well as being interesting listening in their own right, also serve as excellent propagation indicators. For example, if you can hear an identified beacon or weather station on 8MHz, you're likely to hear any 8MHz military or Numbers station transmissions from that area too.

I'll list some frequencies to point the way; many frequencies are in common use (ie if propagation is right, you're almost guaranteed to hear something); remember though that activity will not be constant, you could hear something immediately or you could be waiting a while. Other frequencies are "discretes", ie stand-alone frequencies to which a callsign may QSY for the course of that particular contact, of which there are thousands worldwide. The USAF has discretes every 3kHz across swathes of HF spectrum. Haunt the popular frequencies by all means, but don't forget to keep tuning through the bands, you never know where interesting sigs are going to pop up.

Black Sigint... Free Radio

With propagation being as good as it has been lately, don't forget to do occasional sweeps through the HF pirate frequencies. Reports are that with cutbacks by the FCC and European regulatory authorities, Pirate (or Free) radio stations are multiplying. Check in the vicinity of the following frequencies, especially on weekends and European or American holidays. Use a bit of hunting nous — you're not going to find American pirates on the air in our early morning, because that's the middle of the day in middle USA, and few sane pirates would operate then. Try from our 1400 onwards, 2200 their time. Their midnight is a favourite. Likewise, look for the Europirates when propagation and security is right for THEIR time zone.

| Freq (kHz) & Mode |
|-------------------------|
| 15,015 - 15,070 AM, SSB |
| 13,900 AM |
| 12,265 AM |
| 11,400 - 11,725 AM, SSB |
| 9995 AM |
| 7415 - 7550 AM, SSB |
| 7415 AM, SSB |
| 6955 AM, SSB |
| 6950 AM |
| 6200 - 6300 AM, SSB |
| 6240 AM, SSB |
| 3900 - 4000 AM |
| 1650 SSB |

| Usually Heard |
|-------------------|
| European stations |
| US stations |
| European stations |
| European stations |
| European stations |
| US stations |
| US stations |
| US stations |
| very active, Euro |
| mostly European |
| European stations |
| US stations |

The RAAF maintains the **General Purpose HF Net**, with the primary frequencies of: 3032, 5687, 8974, 11,235, 13,206 and many discretes, while the **Australian Army** in Papua New

Guinea has been reported heard on: 6903, 7612, 7664.9, 8993 (patrol net primary?) and 9120 (ops net?)

You could also keep an ear on some common **Royal Australian Navy** frequencies:

| Designator | Freq (kHz, USB) |
|---|-----------------------|
| A1 | 2768 |
| A2 | 4375 |
| A3 | 6510 |
| A4 | 8122 |
| A5 | 13,116 |
| A6 | 17,344 |
| A7 | 22,708 |
| Designators Unknown, Freq (kHz, USB) | |
| 12,359 | 6218 used on exercise |
| 13,194 | 9014 used on exercise |
| 15,924.2 | 8300 common test freq |
| 17,407 | 8316 RNZN |
| 19,755, 22,852, and 26,166 | |

The USAF uses its **Global HF System**, currently being upgraded to **SCOPE Command** (System Capable Of Planned Expansion). This upgrade will see most ground stations operated remotely from Andrews Air Force Base, Maryland. Once-manned ground stations are closing and some frequencies are changing. However, you are liable to hear USAF aircraft (and US Navy ships and aircraft) around the world in contact with many different ground stations on the following frequencies (kHz, USB):

4724, 10,780, 8971: South Atlantic Patrol Net/
BLUE STAR net
6712 11,175, 7995: Antarctic Resupply/
McMurdo Ops
6739, 13,200, 9032: Antarctic Resupply/
McMurdo Ops (also on SATCOM)
8968, 15,016, 8410: Joint Task Force - Full
Accounting (POW/MIA)
8992, 17,976, 8225.15: Joint Task Force - Full
Accounting (also on SATCOM)

That should give you some frequencies to start with!

To kick off this month's main column, we have a letter from someone just back from East Timor. Our correspondent, a long-time, accomplished monitor and member of the Australian Defence Force, reports "I am happy with the gear that I took to Timor; I took my AOR-8200, which was worth every cent I spent on it. Also the Expander Cards make it a powerful tool, as it is capable of deciphering secure voice (analogue) which is very popular with the Bahasa Indonesian speakers. The Band Scope made life very easy in finding those elusive frequencies. Coupled with that I had a JIM pre-amp, which worked exceptionally well. For antennas I used a discone and a HF dipole. I also had a DX-200 HF receiver for listening to shortwave news etc."

I'm glad to see someone else reports good service from a JIM (Japan Information Medium) pre-amp, I've used mine almost 24/7/365 for two years and more without a fault and it really brings in the weak ones on VHF/UHF.

The report continues "...the trip to Timor provided an opportunity that had never been presented before. A multi-national force using common communications, unencrypted, and in English or other languages that I speak. From a

scanner-user's point of view it was absolutely outstanding.

"The entire spectrum was ripe for the pickings, and let me tell you never a dull moment was had, the whole unit got involved at times with some of the more humorous transmissions and events that CIVPOL were involved in..." *Oops, there's at least a few CIVPOL who read this 'ere stuff...! :-)* "I also used the set-up to record the Radio Australia news every day so that we knew what was going on in the rest of the world.

"Timor was saturated with VHF-low communications, both from within and from outside Timor. That part of the spectrum was by far the most active. The propagation was just incredible."

An interesting point is that it was reported that no satellite comms at all had been received while in Timor. I'm not sure if anyone else on the west coast is receiving anything on the satellites, being on the east side myself. Anyone have some active satellite frequencies for Western Australia/Timor?

I have agreed with the editor that, while UN troops and CIVPOL are still active in Timor, no in-country VHF/UHF frequencies will be given here. Let the militia do their own SIGINT, and besides anything else, VHF/UHF frequencies are no good to you unless you are in the area of operations. However, our correspondent had a general overview of the comms situation there: "The UN used Phillips mobile radios with remote-head mounting; they had 16 channels available, six of them duplex-paired, the other 10 simplex. The antennas were simple 5/8-wave stainless steel whips on a **Mobile One** base. The UN also utilised HF communications, using **Barrett** and **Codan** radios in a fixed-channel arrangement. The antennas used were the **Terlin** trapped-style mounted on a large spring base. The HF nets weren't used too frequently after the VHF set up was working."

If I hear any more, I'll pass it on here. And here's hoping for a happy and safe time for all the people we have in Timor.

Finally, sadly, two callsigns you won't be hearing again: Noel Jones in Auckland noted their passing; "HMNZS WAIKATO (F55), Leander class Frigate, callsign ZMPS is no more. Scuttled off the coast of New Zealand, she joins HMNZS TUI (A2), Hydrographic/Oceanographic Survey Ship callsign ZMSQ, also scuttled in the same area."

Reported Logs

These are actual loggings reported by readers and other monitors over the last month. Mode is always USB unless stated otherwise. Some simple abbreviations may be used, such as **clg** (calling), **Pirp** (Pilot Report), **p/p** (phone patch), **TTF** (Trend-Type Forecast [weather]), **TAF** (Terminal Aerodrome Forecast [weather]), **wkg** (working), **wx** (weather). Others will be explained as they occur. Send in your loggings with your name (or pseudonym if you prefer) and location!



3372kHz:

0750z unidentified station (MP3 ?) wkg 2039 TOKOROA?, "is there any previous medical things we should know about? Standby while I go and call a doctor over." (NJ)

5383kHz:

2021z ZKHQ clg ZKCT17 for radio check-in, also ZKCT33, ZKCT35, ZKCT41 (weak signal faded out, NZ Civil Defence Channel F, Central zone primary. NJ)

5687kHz:

0833z STRIKER 67 (P-3C Orion maritime patrol/ASW aircraft, 10Sqn RAAF, Edinburgh SA), wkg AIR FORCE AUCKLAND, request TAF YAMB (Amberley) for 0925 (NJ)
0904z SABRE 1 (RAAF F-111C, 1Sqn/6Sqn Amberley, Qld), clg AIR FORCE SYDNEY, TTF YAMB (Amberley) for 0900 when available [AIR FORCE SYDNEY requested change to 5687 from 8974, SABRE 1 to call again 40 minutes for TTF] (NJ)

5696kHz:

1306z CAMSLANT CHESAPEAKE calling 6038, requesting destination. (JB) US Coast Guard Communications Area Master Station (Atlantic), Chesapeake, Virginia.

6482kHz:

1945z CLA, Havana Radio, Cuba, CW channel marker, S4-5 (JB)

6965kHz:

1207z (2207 local) FDD (aircraft) calling VJA, RFDS Mount Isa, ETA 2250 (local), notify ambulance one Cat 3 patient aboard. (JB)

7435kHz:

1035z *Voice of The Martyrs*; a new twist to religious broadcasters; this one has short radio-plays reminiscent of the 1960s in between religious segments. One show heard was an episode of *The Great Gilderspeed*, while another was a typical private detective show. (JB)

8122kHz:

0940z UBK calling CANBERRA CONTROL to confirm receipt of traffic. Told to resend all. (AI)

0946z CANBERRA CONTROL calling MELBOURNE [HMAS Melbourne, FFG-05] "roger your figures 903, out." (AI)

1000z TOWNSVILLE [HMAS Townsville, Patrol Boat 205] calling CANBERRA CONTROL in the blind to send traffic twice. (AI)

1018z CANBERRA CONTROL calling YFC, to send test tapes 12 MHz 75 baud. (AI)

1030z U8C calling CANBERRA CONTROL to confirm receipt of test tapes. (AI)

1046z CANBERRA CONTROL calling ZJM to shift to 8 MHz (AI)

8867kHz:

0623z COAST GUARD 1714, wkg SAN FRANCISCO ATC estimate for 13N at 0638z (NJ)

8957kHz:

0948z SHANNON VOLMET, EIP, Ireland, with weather reports. (JB)

8971kHz:

0906z MONGOOSE 09 calling BLUE STAR "Request secure line over." (AI) As far as is known, MONGOOSE is a "Random Tactical" callsign, ie it is not allocated to any particular unit/station (and so can be used by any unit). BLUE STAR is the US Navy Atlantic P-3C Patrol Sqn Duty Office, NAS Roosevelt Roads Puerto Rico. Recently renamed the "Tactical Support Control Centre", TSCC NAS Roosevelt Roads to reflect its function in anti-drug-smuggling operations. Also functions as Fleet Area Control and Surveillance Facility in the South Atlantic/Caribbean area.

0909z BLUE STAR calling MONGOOSE 09 "Have you lima charlie, request you switch to high fox over." (AI) [High Fox = acronym for HF - High Frequency]

0910z SHARK 10 calling MONGOOSE 06 for radio check. (AI) SHARK is always an interesting callsign in the context of involvement with BLUE STAR. It is used quite often by US Coast Guard Cutters involved in counter-smuggling and counter-drugs operations, missions which can be heard under way on this frequency quite often. The suffixed digits are the last two digits of the hull number of that particular cutter. Unfortunately there are several East Coast cutters with hull numbers ending in "10", making positive ID difficult.

8974kHz:

0114z AIR FORCE SYDNEY calling SEALION 464 with wx for Williamtown. (AI) SEALION is a callsign used by RAAF 92W Edinburgh SA, comprising 292Sqn, 10Sqn & 11Sqn P-3C Orions.

0200z TAIWAN 24 calling AIR FORCE TOWNSVILLE. Self ID'd as a Navy Squirrel helo enroute to Shoalwater Bay from Rockhampton. (AI)

0227z REACH 06 calling AIR FORCE SYDNEY with flight details and SelCall check. (AI)

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MILITARY SOUNDS



REACH is the generic heavy-lift Air Mobility Command callsign. USAF C-130 Hercules, C-141 Starlifter, C5B Galaxy, C-17A Globemaster, KC-135 Stratotanker and KC-10 Extender aircraft.

0808z HUDSON 505, clg AIR FORCE TOWNSVILLE departure time 0717, operations normal, estimating (something) 0853 (NJ) HUDSON, RAAF HS-748 32Sqn East Sale Vic (I'm not sure if the Beech Super King Air aircraft of 32Sqn use the HUDSON and other 32Sqn callsigns as well as BEAUFORT. It's interesting to see the 505 suffix, when most other HUDSON callsigns heard have a two-digit suffix, eg 21, 24, 25. Anyone?)

0851z SABRE 1 (RAAF F-111) clg AIR FORCE SYDNEY, TTF YAMB (Amberley), will call again 0900z for TTF (NJ)

0904z HUDSON 25 wkg AIR FORCE SYDNEY, "departed YMES (East Sale) 0846z estimated YMES (East Sale) at time 1007z, operations normal, request TAF for YMES (East Sale) and YMER (Merimbula), request TTF YMML (Melbourne), will call again 30 minutes for weather over." (NJ)

0924z HUDSON 24 clg AIR FORCE SYDNEY, answered by AIR FORCE PERTH, do you have requested weathers, over; PERTH advises negative and asks for wx locations, TTF YMML (Melbourne) TAF YMCO (Mallacoota), then AIR FORCE DARWIN came up with wx. (NJ)

0936z HUDSON 25 clg AIR FORCE SYDNEY, answered by AIR FORCE DARWIN, request TAF YMES (East Sale) and TAF YMER (Merimbula); for your information, TAF has been requested from AIR FORCE SYDNEY. AIR FORCE SYDNEY then came up with wx. (NJ)

0952z TAY clg AIR FORCE AUSTRALIA, answered by AIR FORCE PERTH. Requesting p/p with Qantas Ops. Perth advised TAY to QSY to 8977kHz for p/p. P/P connected and TAY advised Ops that they had a 2-1/2 year old girl with a scald to her inside leg, requested medical advice. Qantas Ops contacted medical team and they advised the pilot on what to do until they land in Brisbane. (AR) AIR FORCE AUSTRALIA call word is a general call to any RAAF ground station.

1038z STRIKER 270 clg AIR FORCE DARWIN requesting termination of flight guard "CD". (AR) RAAF P-3C, 10Sqn Edinburgh SA

2237z ENVOY 608 calling AIR FORCE SYDNEY with flight details and SelCall check. (AI) ENVOY is RAAF Mystere Falcon-900 VIP transport, 34Sqn Fairbairn ACT.

8983kHz:

0955z CAMSLANT CHESAPEAKE with RESCUE 2112, "Request you say again your 'west' co-ordinate, over". 2112 not heard here. "You are weak and unreadable, request say again 'west' co-ordinate". Very weak female op heard replying. (JB)

1025z RESCUE 1711 called CAMSPAC Pt. Reyes, "On finals Barbers Point, Hawaii, close guard." (JB) US Coast Guard Communications Area Master Station (Pacific), Pt Reyes, California. RESCUE 1711 is a HC-130H Hercules based at Clearwater, Florida; a long way from home.

8992kHz:

0910z LANCER 01 called MAINSAIL, answered by THULE, p/p to BLUE STAR, arranging schedule. (JB)

Here's a good example of a little practical COMINT. LANCER is a callsign used by, amongst others, at least two US airborne assets; US Navy EA-6B Prowler electronic warfare aircraft of VAQ-131 "Lancers" use it; however, they are based at Whidbey Island, California, and although this doesn't preclude them from operating on the east coast, it's unlikely to be them.

The callsign LANCER is also used by US Navy P-3C Orions of VP-10 "Red Lancers", who are based at NAS Brunswick, Maine, with PATWING-5. They are much more likely to be phoning home to BLUE STAR, South Atlantic P-3C Patrol Sqn Duty Office, via the communications base at THULE, Greenland. MAINSAIL is a general call for any US Global ground station (similar to a CQ call).

11,178kHz:

0315z HUDSON 21 calling AIR FORCE AUCKLAND with traffic about illegal fishing vessel. Awaiting further tasking from Air Command. (AI)

0332z HUDSON 21 in p/p with Air Command Ops. Told to go to RAAF EAST SALE. (AI)

11,235kHz:

0845z STALLION 210 wkg AIR FORCE TOWNSVILLE, "SelCall check OK we will be keeping SelCall watch this frequency over." (NJ) STALLION is a RAAF C-130H Hercules, 36Sqn Richmond NSW.

0922z HUDSON 24 clg AIR FORCE SYDNEY nothing heard, changing 89. (NJ)

11,300kHz:

2130z Australian Ionospheric Prediction Service aircraft passing weather forecast to base. (AI)

VHF

123.100MHz (AM?):

0922z IRON BAR calling HUDSON 26 and HUDSON 27 "This is IRON BAR, request you conduct skeds this frequency, over." IRON BAR gave location as EAST SALE RAAF Base. (AI) IRON BAR is a new one on me...

143.625MHz nFM:

For those in Europe and the US, the International Space Station (Space Station Alpha) is rapidly becoming a daily communications catch on the 143.625MHz nFM frequency. They're hearing it go overhead on their scanners... "there were three passes of ISS over Paris, France tonight. I listened at 143.625 MHz FM with a Stabo XR 2001 scanner and a 60cm telescopic antenna, ie very rudimentary equipment.

1702z pass in the southern sky. Some phrases in Russian, intermixed with data transfer, possibly on a slightly different frequency.

1838z pass in the northern sky. Very loud Russian conversation for several minutes. In the background a faint voice could be heard, probably a loudspeaker with the ground station operator's voice.

2014z pass in the northern sky. Absolutely nothing was heard. The difference in signal strength between the first and second passes can perhaps be explained by the orientation of the ISS antennas." The above from Bruno Tilgner, Saint-Cloud, France; 48°84'N 2°40'E

On December 19, the first-ever school contact via ARISS (Amateur Radio/International Space Station) took place, when students at the Burbank School in Burbank, Illinois USA made contact with and spoke to the Space Station Crew.

(Some may wonder why 143.625MHz. It's the very frequency used by Cosmonaut Yuri Gagarin when he became the first human in space. Ed.)

261.925MHz nFM:

0040z KINGFISH DELTA calling ICE 12 with tech assistance for ICE 11. (AI) KINGFISH DELTA is Christchurch New Zealand Operation Deep Freeze Ops (Summer resupply of US Antarctic bases).

0043z KINGFISH DELTA calling ICE 11 with message about ILS repairs. (AI)

0650z KINGFISH DELTA calling ICE 09 with weather details. (AI)

Thanks to the following folks for sharing their logs.

AI Allen Inderswisch, Victoria

AR Andrew Robertson, ACT

JB John Batty, Queensland

NJ Noel Jones, Auckland.

<http://homepages.ihug.co.nz/~ngjones>

See you next month. 73, STARLIGHT out. **R**



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Shortwave antennas for all

By Anthony Smith, ARDXC member

Hello, short-wave radio is my world... welcome to it! For over 35 years I have been listening to sometimes incredibly clear, strong short-wave signals. However, incredibly *poor* propagation is often the order of the day, and I'm still enthralled by it all. The mystery is still there, the wonder of it all, whether it's a clear signal from the BBC beamed towards my location, or a poor signal that's meant for distant shores far from my own.

When I was a kid almost all family radios (called wireless in those days) had short-wave capabilities. They were very large valve radios that often stood as much as 4ft 6in high by about 2 feet wide. The family often gathered around the beast at night to listen to the BBC news broadcast. The result was generally quite good, considering few families ever went to the trouble of an outside antenna! There was also a richness to the sound that was lost in the new generation transistor radios which, at that time, was still far in the future; this was probably due to their massive speakers and valve amps.

I, like so many others of the same persuasion, have a collection of short-wave receivers that has steadily grown. Tabletop receivers at home, portable receivers for overnight fishing trips, or for travelling. But no matter how good (or bad) the receiver, it is only as good as the antenna system.

Knowing that led me to write this story, which is all about getting some *action* from your radio!

For most of us SWLers, our first (and often our *last*) antenna is the basic long-wire. Often bought from a Dick Smith or similar store, it does an excellent job, but there is life after the venerable long-wire! So let's have a look at a few that can help us seek better, stronger signals for both tabletop and portable radio listening.

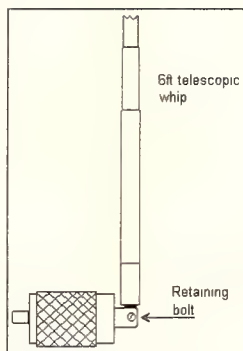
The telescopic whip...

First, a simple antenna that works very well for those with a tabletop receiver at home. Many such people would benefit from something like this, be it for reasons such as space, bad health, or the inability to construct an outdoor antenna system, or, of course, if they no longer have access to one. This one I used myself with very satisfactory results often rivalling my outdoor longwire, and at times I still use it. Oh, it will require some work on your part... about five minutes of it! So what am I talking about?

Well, many years ago I saw a telescopic whip made by Yaesu for its table-top receivers. At the time, my longwire had come down in a storm, and I wished to bring my heavy receiver out to the dining room to listen in whilst other family members were in the lounge room watching TV (thankfully never a great habit of mine).

The Yaesu tele-whip seemed okay... it had the standard coax connector and would simply screw straight into the back of the receiver. But the results were not what I had in mind, quite poor really. So, what should I do? Simple, I found in a Tandy store a 6ft telescopic whip element. Now, if you have ever extended what looks like a normal whip aerial for a portable up to six feet high you soon realise you're onto something!

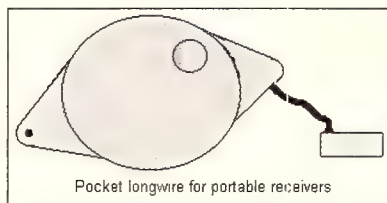
A standard retaining bolt on both the Tandy and Yaesu units means you're in business in a scant five minutes. (See above.) Now just see what you get when you take off the original whip and replace it with the Tandy six-footer!



What a difference this 6ft whip makes! Now, you might wonder how with the receiver sitting on a table you can extend the antenna without having 10ft high ceilings. Simply tighten the retaining bolt at the base of the antenna a little more than usual. Then you can slant the antenna somewhat to achieve something decent. Happy and rewarding listening!

The spool antenna...

Here's another godsend for the traveller with a portable receiver — it's shown below. The one I use is from a Tandy store. Sangean makes one too. The end tube on the wire element has a cut-out slot to enable



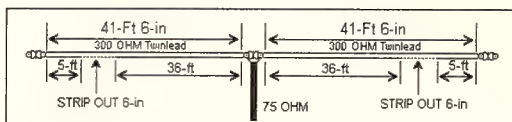
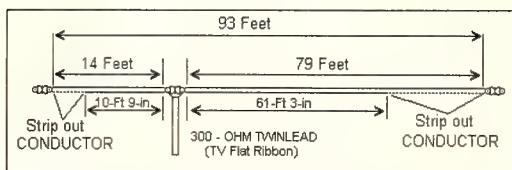
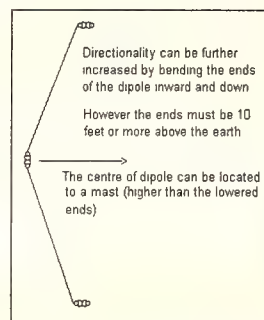
you to hook it (the antenna wire) onto and then slide down to the base of the telescopic whip on the portable receiver. It works, and works well.

Simply pull out as much wire as you require, and place it as high as you can, using the container itself as a balance weight. When you're finished, simply wind it up like a tape measure, and slip into a pocket. Yep, it's that easy. There's 25ft or more of wire in one of these, and that's more than enough to make a huge difference to any portable. The longwire works on the induction method, but that's a story for another day.

Building something for home...

Now for something a little more substantial. Here are a few dipole antenna systems. The dipole can be a very handy antenna, especially if you have one or two that can change directionality. Now, as you may be aware, most dipoles receive signals from both sides (ie right angle to the dipole length), but you can make a dipole receive from one side only! (See right.)

Did you also know you can make a dipole that's *not* a dipole? How about a dipole one day and a longwire antenna the next? (See below.)



After all, this is often the weak spot in our hobby, isn't it?

So often we hear of people who have great receivers and poor

antenna systems! See the diagram on the opposite page for a general description of directionality on longwire and dipole antenna systems. Then have look at a few alternatives, and *think* about it...

A longwire antenna is not, as some think, totally omnidirectional. It does have a stronger pull on signals from its ends (oblique) with a somewhat lesser but still efficient pull from its sides. The lobes for a longwire antenna actually look like a clover leaf pattern.

A dipole, on the other hand, is a directional antenna with its 'pull' from right angles to its sides. It has a tear-drop lobe pattern if set at the correct height. A dipole antenna will work well at a half wavelength above the earth. A quarter wavelength high is adequate (in fact, if receiving high angle transmissions a quarter wavelength in height may be better) but, if possible, go for a half wavelength high. If not set at the correct height the lobe (reception) pattern can change quite dramatically, and that usually means... less gain.

Now let us look at an increased directional dipole antenna system (as shown opposite). With one set in a north-south, or probably a north-west by south-east direction, and one in an east-west (or south-east by north-west) direction you'd have the best of both worlds.

It is important to follow the directions: the ends of a dipole must be *lower than the centre* of the dipole. For best performance, the centre of the dipole should be pulled back *away* from the direction the wanted signals are coming from. Think of it somewhat like holding a pan to collect rain water. If you turn it the other way around, you won't get much water!

And please remember, the main dipole can be constructed of a single wire only. It needs to be cut in the centre (or where necessary for reception of particular bands) and should be used with a twin line feedline. Remember; the more directional your antenna, the more gain, and that is what most of us are searching for — *gain*, for increased reception power.

The dipole that's not always a dipole

The dipole antenna shown second from the bottom, opposite, is constructed of 300ohm twinlead (you know, the old, flat TV ribbon). Effectively creating two antenna systems, it will cover the 60, 49, 41, 31, 25, 22, 19, 16, 13 and 11 metre bands. Only the ends at the feedline insulator need to be soldered together. To increase versatility, the feedline ends can simply be twisted together at the receiver end and connected to an antenna tuner (you *do* use a tuner, don't you?) and please do use a short piece of coax from the tuner to the receiver. This then creates a longwire antenna. Directionality is thus changed by this procedure. Not many single antenna systems have this versatility.

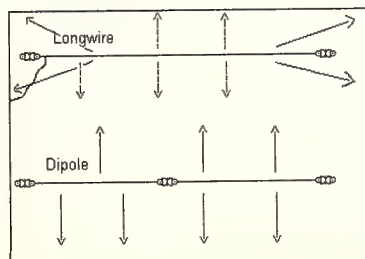
In the bottom picture, opposite, a variation on the same theme is made of two centre-fed dipoles. This antenna's coverage is for the 60, 49, 41, 25, 22, 19, 16, 13 and 11 metre bands. The far ends of this dipole do need to be joined and soldered.

This one can also be used as a longwire antenna in the same manner. You use 300 ohm twin-feed for the antenna with a 75 ohm coax feedline. Now be aware that not all short-wave receivers have a coaxial impedance plug of 50 ohms. I have two desktop units, and one has a 50 ohm impedance, the other 75 ohms. Check yours before making a decision on the feedline impedance.

Also, it is a good idea to use an antenna tuner/coupler for correct matching with any antenna system.

Using the Earth...

Can an antenna earth improve reception? Ah... yes, it sure can. With some antennas it is a must. With others it is not always necessary. But, even a dipole can at times benefit from an 'added earth', so in a future article we will spend a little time on the subject of 'earth' connections.



I will leave you with this thought: Electricity needs a complete circuit. Otherwise your toaster, or your receiver, simply won't work (horrors). That feeble signal that you are trying to listen to on your short-wave receiver is just like that toaster... electricity, think about it.

Your basic dipole uses the two separated antenna wires for this 'circuit completion', but...

There should be something in the above that can help or suit your situation. Need more personal help? If you are not a member of a short-wave club, why not consider *joining* one? As a member of the **Australian Radio DX Club (ARDXC)** I now have answers to many of the small (and not so small) problems that I have encountered with my hobby, and I live in central Queensland! With the advent of E-mail, an answer is only ever a short wait away.

There will be someone in your club who has answers to your problems. Often your radio club can be a great source for used equipment that, under normal circumstances, is out of your budget range. Many high priced, high quality 'like new' short-wave receivers become affordable when five to six years old.

Maybe next time we should look at a so called 'secret' antenna? Scoffed at by some, close held secret by others... but could it be nothing more than a highly directional longwire? Then there's the clothes line antenna!!

What about a list of computer programs suited to our hobby? Now *there* is one thing that I just can't live without! At any time of the day or night I know which broadcaster is on the air with start/finish times, power output, target areas, beam headings, all of them very important points for successful DXing!

Ever wondered why a major broadcaster with very powerful transmitters on a frequency that suits your local conditions is not reaching you? Azimuth my fellow SWLer, azimuth! Together with a great circle map program and reception report program, I'm able to enjoy very rewarding DXing.

Until next time, may your antennas be resonant and your home a happy one. R

Foxtrot Uniform DX Group (IIm)

Hello to you all, this is 19 FU 001, Walter, president and founder of the Foxtrot Uniform group (Friends United). We founded the group in the city of Haarlem, 20km from Amsterdam, capital city of the Netherlands, in 1994. At the moment we have around 600 members in 33 different countries.

For foreign members, the membership cost is US\$5 for lifetime membership. You get a membership certificate and a couple of QSL cards and, of course, a member directory. But you're also free to choose any single club item you want upon joining!

We do different things, like at evening time on Monday and Wednesday, we have our DX net from 1900-2000 (local Dutch time) on our monitor channel. Then Saturday night from 2200-2400 we have also a big net. And Sundays Mr Ron 19 FU 169 is our net leader, then 2200-2300 Mister Theo 19 FU 693 is doing the net from Den Helder. Further, we have every year our eyeball meeting which is open to all our IIm friends!

We have also a mailing list (internet) for our members to check the latest news! You'll find its details on our home page <http://members.nbci.com/19fu001/>

Here you will find all the news we have.

Further we have different activations, like 104 FU DX or 19 FU-SAIL 2000, while on January 1, 2001 there was 43 FU-ACT — the most-wanted station from Australia on IIm band they said!

If you worked operator Simon, the QSL Manager is Walter, PO Box 4902-2003, ex Haarlem, Netherlands. The normal contribution US\$1 or one IRC for the special QSL card.

We have at the moment two directors in Australia — 43 FU 181 Mr Peter in Victoria, and 43 FU 808 Mr Simon in the ACT.

If you would like more info about our group or would like to join us as a new member, please let me know under E-mail pingo@wxs.nl or write to PO Box 4902-2003, ex Haarlem, Netherlands.

Greetings, 19 FU 001 Walter, and have great DX!!

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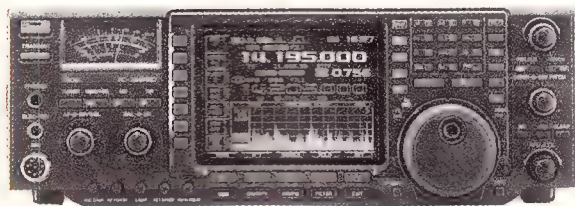
Phone: (02) 4340 2500, www.ccarc.org.au, email bobfitz@ozemail.com.au

The RADIOMAG free club announcement page. Call the Editor for details.

IC-R3 h/held



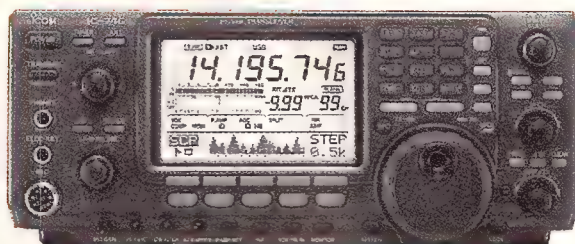
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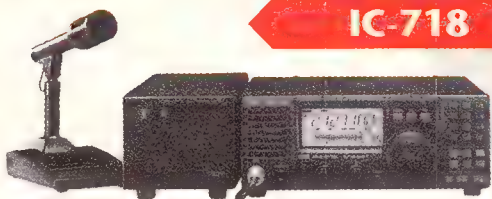
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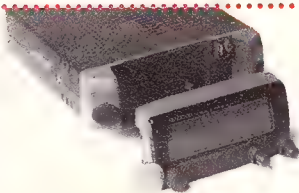
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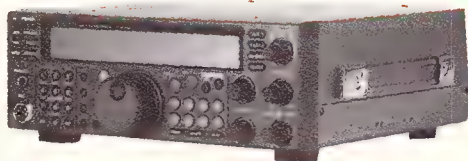


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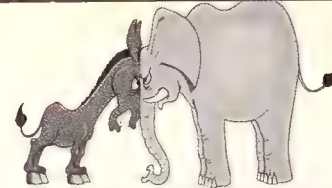
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CONTESTS

By Ian Godsfil, VK3VP
contests@radiomag.com



Contest Calendar March - May 2001

| | |
|-----------|--|
| Mar 3/4 | ARRL DX Contest (SSB) |
| Mar 10/11 | RSGB Commonwealth Contest (CW) (Mar 01) |
| Mar 10/11 | World-Wide Locator Contest (CW/SSB) |
| Mar 17/18 | John Moyle Field Day Contest (All modes) |
| Mar 17/18 | Russian DX Contest (CW/SSB) |
| Mar 17/18 | Bermuda WW Contest (CW/SSB) |
| Mar 17/18 | DARC HF SSTV Contest |
| Mar 24/25 | CQ WW WPX Contest (SSB) |
| Apr 7/8 | SP DX Contest (CW/SSB) |
| Apr 7/8 | EA RTTY Contest |
| Apr 7/8 | King of Spain Contest (CW/SSB) |
| Apr 13-15 | Japan Int. DX Contest 20-10 m (CW) |
| Apr 14 | Holyland DX Contest (CW/SSB) |
| Apr 21/22 | YU DX Contest (CW/SSB) |
| Apr 25 | Harry Angel Sprint (CW/SSB) |
| Apr 28/29 | SP DX RTTY Contest |
| Apr 28/29 | Helvetia DX Contest (CW/SSB) |
| May 5 | VK/Trans-Tasman 80m Contest (CW/SSB) |
| May 5/6 | Ten-Ten Intl. Spring QSO Party (CW/RTTY) |
| May 5/6 | ARI Intl. DX Contest (CW/SSB/RTTY) |
| May 12/13 | VOLTA WW RTTY Contest |
| May 12/13 | CQ-M Intl. DX Contest (CW/SSB/SSTV) |
| May 26/27 | Anatolian RTTY WW Contest |
| May 26/27 | CQ WW WPX Contest (CW) |

Greetings to all testers, and welcome to a new millennium and to a new magazine!! For years I have said that we should always try to learn something new. Well, let's hope that the two factors above will bring us out of our ruts to some new thoughts, whilst still presenting the information that you have come to expect.

This month some information about two Australian contests. The **John Moyle Field Day** is a favourite amongst many of us, so please get your equipment ready and select a good spot.

The other has been received from Bruce Renn, VK3JWZ.

Please make this new event widely known and support it with your participation.

Last year some people pointed out that I was a bit behind in my knowledge of computers in the contesting field. They were right and I always admitted that.

However, those people may be interested to know that I have done plenty of searching and reading and have now played about with various logging programs; I have even adopted one as the shack log! Progress indeed!!

Also I would say that when one is a little older one sees things that youngsters would not. No matter what anyone says, things electronic do not give one the flexibility of information that one has on paper, especially when one needs to consult several sources to collate information.

It is so easy to look at another piece of paper than to minimise one document in order to open another.

Then we get the well-meaning fellow who publishes HIS program and puts the information round the opposite way! Such is life, electronically or otherwise.

Seriously though, there is a new format for contest log submission called *Cabrillo*. I intend to examine this and write about it soon. If anyone is using it regularly I would be most interested to hear from you.

Good contesting and 73, Ian Godsfil VK3VP

A new 80m Contest

The inaugural **VK/trans-Tasman Contest** will be run on 80 metres on the first Saturday in May.

The inspiration for this Contest came from the **NZ Memorial Contest**, which is held during July on 80m. It runs for six hours, in one-hour stages, and has a points system based on call-areas worked. It is long enough to be interesting without being arduous, and provides constant activity with stations being reworked each hour.

The intention with the **VK/trans-Tasman Contest** is to have a similar six hour duration that will not impinge too much on family life or sleeping time. The main emphasis will be on contacts made between VK and ZL stations, with the scoring structured to give all stations an equal chance, regardless of their geographical location.

Bonus points can also be earned each hour, and they are awarded so as to encourage trans-Tasman contacts and participation by VK5/8 and VK6 stations.

Phone and CW Categories will be catered for, as well as separate Categories to encourage QRP and Mobile operators.

An engraved trophy will be awarded to the outright winner, with certificates for winners and placegetters in the other Categories.

This Contest is not a sprint or a marathon. It will provide six hours of non-stop evening entertainment, in which no station should be advantaged by location or equipment.

So, make a note of the details, and give it a go!

The only thing we ask is that you take the time to submit your log (even if you don't think you will win). This is essential to make it all worthwhile, and to ensure the on-going success of the Contest.

Rules will be published in the WIA and NZART magazines, and are available on the Contest website: <http://home.iprimus.com.au/vktasman>

Queries and comments can be E-mailed to the Contest Manager, whose E-mail is vktasman@hotmail.com

2001 John Moyle Field Day Contest

Presented by Eric, VK4NEF

Well, once again those who enjoy a weekend in the bush should be planning for this year's John Moyle Field Day. The rules are the same as for last year.

If anyone wishes to contact me privately to discuss rules etc, my home phone number is (07) 3390 5664, and my address is as shown in the Log Submission section below. I wish all entrants good luck, and look forward to hearing you on the air during the contest!

Overview

1. The aim is to encourage and provide familiarisation with portable operation, and provide training for emergency situations. The rules are therefore designed to encourage field operation.

2. The contest takes place on the third full weekend in March each year, and runs from 0100 UTC Saturday to 0059 UTC Sunday, 17-18 March 2001.

3. The contest is open to all VK, ZL and P2 stations. Other stations are welcome to participate, but can only claim points for contacts with VK, ZL and P2 stations.

4. Single operator portable entries shall consist of one choice from each of the following (eg six hour, portable, phone, VHF/UHF):

- a. 24 or 6 hour;
- b. Phone, CW, or All mode;
- c. HF, VHF/UHF or All Band.

5. Multi-operator portable entries shall be All mode, and consist of one choice from the following:

- a. 24 or 6 hour; or b. HF, VHF/UHF or All Band.

6. Home and SWL entries may be either 24 hour or 6 hours, all mode, all band.

Scoring

7. Portable HF stations shall score two points per QSO.

8. Portable stations shall score the following on 6m:

- a. 0-49 km, 2 points per QSO;
- b. 50-99 km, 10 points per QSO;
- c. 100-149 km 20 points per QSO;
- d. 150-199 km 30 points per QSO;
- e. 200-499 km 50 points per QSO;
- f. 500 km and greater, 2 points per QSO.

9. Portable stations shall score the following on 144MHz and higher:

- a. 0 to 49 km, 2 points per QSO;
- b. 50 to 99 km, 10 points per QSO;
- c. 100 to 149 km, 20 points per QSO;
- d. 150 km and greater, 30 points per QSO.

10. For each VHF/UHF QSO where more than 2 points is claimed, either the latitude and longitude of the station contacted or other satisfactory proof of distance must be supplied.

11. Home stations shall score:

- a. Two points per QSO with each portable station.
- b. One point per QSO with other home stations.

Log Submission

12. Logs must be accompanied by a summary sheet showing: call sign, name, mailing address, section entered, number of contacts, claimed score, location of the station during the contest and equipment used, and a signed declaration stating "I hereby declare that this station was operated in accordance with the rules and spirit of the contest". For multi-operator stations, the names and callsigns (legible) of all operators must be listed.

13. Logs must be postmarked no later than 27 April 2001, and forwarded to: John Moyle Contest Manager, 108 Queensport Road, Murarrie Qld 4172, Australia. An ASCII text copy on a MS-DOS floppy disc would be most helpful. Alternatively, logs may be E-mailed to: esr@powerup.com.au Logs sent by disk or E-mail must include a summary sheet and declaration, but the operator's name (legible) is acceptable in lieu of a signature on an E-mailed submission.

Certificates and Trophy

14. At the discretion of the Contest Manager, certificates will be awarded to the winners of each portable section. Additional certificates may be awarded where operation merits it. Note that entrants in a 24-hour section are ineligible for awards in a six-hour section.

15. The Australian portable station, CW section, with the highest CW score will be awarded the President's Cup, a perpetual trophy held at the Executive Office, and will receive an individually inscribed wall plaque as permanent recognition.

Disqualification

16. General WIA contest disqualification criteria, as published in *Amateur Radio* from time to time, applies to entries in this contest. Logs which are illegible or excessively untidy are also liable to be disqualified.

Definitions

17. A portable station comprises field equipment operating from a power source (eg batteries, portable generator, solar power, wind power etc) independent of any permanent facilities.

18. All equipment comprising the portable station must be located within an 800m diameter circle.

19. A single operator station is where one person performs all operating, logging, and spotting functions.

20. A single operator may only use a callsign of which he/she is the official holder. A single operator may not use a callsign belonging to any group, club or organisation for which he/she is a sponsor except as part of a multioperator entry.

21. A multioperator station is where more than one person operates, checks for duplicates, keeps the log, performs spotting, etc.

22. A multioperator station may use only one callsign during the contest.

23. Multioperator stations may only use one transmitter on each band at any one time, regardless of the mode in use.

24. Multioperator stations must use a separate log for each band.

25. A station operated by a club, group, or organisation will be considered to be multioperator by default.

26. None of the portable field equipment may be erected on the site earlier than 28 hours before the beginning of the contest.

27. Single operator stations may receive moderate assistance prior to and during the contest, except for operating, logging and spotting. The practice of clubs or groups providing massive logistic support to a single operator is, however, totally against the spirit of the contest. Offenders will be disqualified, and at the discretion of the manager, may be banned from further participation in the contest for a period of up to three years.

28. Phone includes SSB, AM and FM.

29. CW includes CW, RTTY, and packet.

30. It is not expected that any other modes will be used in the contest, but if they are, they shall be classed as CW.

31. All amateur bands may be used except 10, 18 and 24 MHz. VHF/UHF means all amateur bands above 30 MHz. Note: On 6m, the region below 50.150 has been declared a contest-free zone, and contest CQs and exchanges may only take place above this frequency. Stations violating this rule will be disqualified.

32. Cross-band, cross-mode and contacts made via repeaters are not permitted for contest credit. However, repeaters may be used to arrange a contact on another frequency where a repeater is not used for the contact.

33. Stations may make repeat contacts and claim full points for each one. For this purpose, the contest is divided into eight consecutive three-hour blocks: 01-0359; 04-0659; 07-0959; 10-1259; 13-1559; 16-1859; 19-2159; and 22-0059 UTC. If you work a station at 0359 UTC a repeat contact may be made after the start of a new block providing they are not consecutive or are separated by five minutes, since the previous valid contact with that station on the same band and mode.

34. Stations must exchange ciphers comprising RS(T) plus a three-digit number commencing at 001 and incrementing by one for each contact.

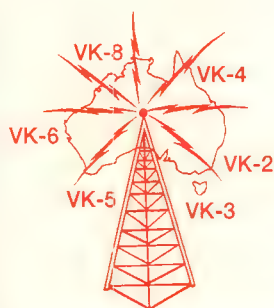
35. Portable stations shall add the letter 'P' to their own cipher, eg 59001P.

36. Multioperator stations are to commence each band with 001.

37. Receiving stations must record the ciphers sent by both stations being logged. QSO points will be on the same basis as for Home Stations, unless the receiving station is portable.

38. The practice of commencing operation and later selecting the most profitable operational period within the allocated contest times is not in the spirit of the contest, and shall result in disqualification. The period of operation commences with the first contact on any band or mode, and finishes either six or 24 hours later.

R



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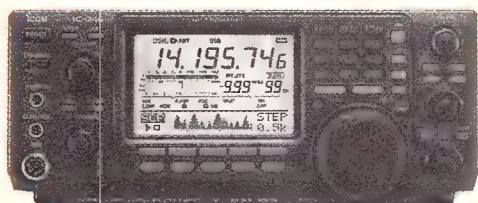
ATRC0300PA/cce



TS-870S



TS-50S



IC-746



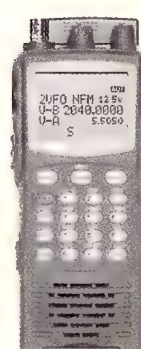
TH-G71A



TH-D7E



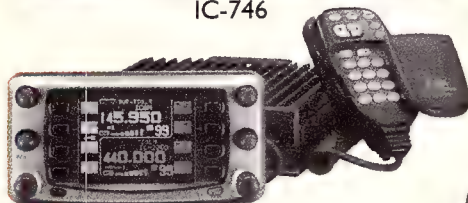
VC-H1



AR-8200



IC-R3



IC-2800H

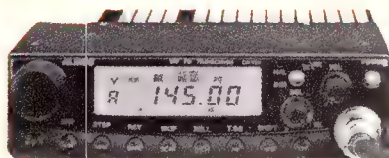


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DR-610

MAGNUM

BUTTERNUT



DJ-X10E



DJ-G5



DJ-C5



DJ-195



DJ-V5E



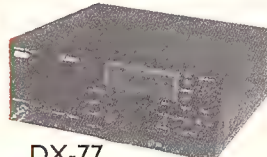
DX-70TH



DR-140



DR-605T



DX-77

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PO Box 90, Norfolk Island, South Pacific 2899

E-mail: kirsti@radiomag.com

Of stone tablets and modern devices...

Oh, no! Not *another* contest! It is a sigh from many a non-contester who wants to find a spot on one band or another to have a leisurely ragchew. But, these days just about every weekend is a contest weekend. Or so it seems.

It was not always thus. Like everything else, contests must have started in a modest way. The aim is of course to win; to prove oneself as a competent operator and owner of a half decent station setup. Here was a chance to meet an international challenge without even having to leave one's comfortable shack. Once the idea had taken hold, contesting became extremely popular around the world. Even some 40 years ago, at least one contest every couple of weeks was scheduled in the "Contest Calendar". Until today when we have run out of weekends and more than one contest may take place during the same weekend. I am thinking here of lesser contests, maybe restricted to certain countries/ interests etc. The really big ones, such as CQWW and similar global events are now so big that they drown out everything else. Old hands may escape to the CW sections of the bands when the contest runs on SSB, and vice versa. But during the SSB operation many now just have to give up and go out and mow the lawn or wash the car. This is what progress has done for us.

In the beginning, there was the single operator in front of his single rig, hooked up to a simple antenna and running maybe only 100 watts. He or she sat at home, in the shack, shack-door closed and XYL or OM primed to look after his or her every need for the duration of the contest. In addition to these serious testers, DXers would also be around as the contest was sure to bring some exotic DX station out of hiding. The anticipation would have been great and the excitement of not knowing what or who could pop up a couple of kHz up or down the band kept everyone alert. In those days there was also some truth in the saying that "the job is not finished until the paperwork is done". Meaning that after the contest there were pages of logs to tidy up, try to remove any duplicate contacts, count

QSOs and multipliers and finally mail off the finished product to the contest organisers. Technology was, however, improving.

Transistorised rigs made these immensely portable. It was also evident that a DX station only had to call CQ once to be inundated by callers bringing the points score up at a fair rate. So the trick was to operate from a DX location. By now large scale contests had sections for 'multi-operator' and 'multi-rig' high power and so on. It became fashionable to travel, and the more the merrier. To show just one example of a multi-multi operation, we remember the PJ9W operation from Curacao in the 1992 CQWW SSB contest. A 30-man Finnish team shipped 25 antennas, 208 metres of tower and 10,300 feet of coax to Curacao. They built a village of prefabricated huts and set about competing with others in the multi/multi category. Perhaps a couple of old dears taking turns in operating one and tuning around for multipliers on the other of their two rigs at home. But, then, perhaps these two got a new DX country out of it! If people did not enjoy contests, they would not go in for them. And many are not 'in it to win it' but in it for the fun. And technology was a great help.

Hand counting and sweating over log sheets became a thing of the past. The whizkids would log straight into a computer, eliminating duplicate QSOs and counting and sorting as they went along. With appropriate computer programs even the homebodies could wave goodbye to that soul destroying chore, making it much more likely that the log would actually be submitted for judgement. Although knowing that they stood little chance of beating the 'big boys'. Or even beating a moderate operator who happened to live in a more advantageous location.

It is, for instance, fairly easy to work several countries (multipliers) living in Europe where they are all bunched together. And north/south propagation paths are easier than east/west paths. In addition, many operators in Europe keep their beams fixed on the USA. Or some other country with a heavy amateur radio population. Which is not the Pacific. So all in all, location does play a role as well as skill and station standards. These contests are not the Olympics or even World

Championships due to the variety of conditions and geographic inequities. To really test one's skills it is necessary to leave the shack and do a spot of travelling so as to meet contestants on an even playing field.

Such a contest took place last year in Slovenia where 106 competitors from 27 countries met for the WRTC-2000 or World Radiosport Team Championship-2000. 53 hilltop or mountaintop locations were equipped with 53 identical antenna systems and, working two to a team, the 20-hour contest got under way, running no more than 100 w. Australia was represented by VK4EMM and VK4XY on this occasion. The idea of WRTC was first hatched in the USA back in 1989 and already in 1990 the first contest got under way in Seattle. It is not an annual event as yet. It is both costly and time consuming for the organisers and so needs a strong committed group to volunteer to host the next championships. There is considerable enthusiasm, though. In addition to the competitors, many people travelled to Slovenia for the occasion. The Slovenian Post Office also issued a commemorative stamp. Keep your eyes out when you receive S5 cards. The envelope may well carry the WRTC-2000 special postage stamp.

Meanwhile, back in the shack we still have our annual contests, big and small. By now the biggest challenge is probably to find a vacant spot on the band in order to start contesting by calling CQ. There are many tricks in the book, such as occupying a frequency well in advance of the contest and holding on to it by generating a CQ call which will do the honours while we are otherwise occupied. This CQ loop may also be applied during necessary breaks during the contest. It is not considered fair or even legal to occupy a frequency in this way but this is where technology has brought us.

In fact, it has brought us to where contests may be the only sign of life left on the bands. What with DX reflectors and packet clusters, the days of checking the bands or calling CQ into the void have just about gone. More and more radio amateurs now put their faith in such modern devices to tell them if it is worth while switching on the rig. But, come contest weekend, and the bands jump into life; rather like the dawn chorus after a quiet night. A bit sad really.

On the other hand, we should not want to go back to the sleepy old days. In this instant age many look back only ten years or so and marvel at how it was then, back in the dark ages. To quote one of the originators of WRTC-2000, H Ward Silver, NØAX writing in the American CQ magazine for October 2000... "Remember that back in those days... No E-mail, no cellular phones. Looking back, it seems like we were chipping out messages on stone tablets to be carried back and forth on donkeys."

Quaint, I am sure.

R

Clandestine Chatter

With Stewart Wilson
E-mail stew@radiomag.com

While listening to international shortwave broadcasters from around the world can be fun, and in some cases challenging, there is a myriad of other broadcasters out there just waiting and *begging* to be listened to.

Yes there are the utility stations, numbers stations, rescue organisations and coast guard, aircraft and what have you. But are they a 'real' challenge? Something to really sink your teeth into? Why I ask if they are real challenges is that many of these broadcasters, if not all, run copious amounts of power, ranging from 100 watts up to, in some cases kilowatts of power. Not to mention their elaborate and hi-tech antenna systems.

How about this for a challenge? 10 watts or less on SSB, sometimes even AM, from the States into a very dodgy antenna system, on a heavily congested segment of the shortwave band? Do you think you and your receiving system are up to the challenge? No, I am not talking about CB stations coming 'at ya wall to wall' with a power mike and echo system that resembles the Grand Canyon, not even utility stations that run a small fleet network on HF. I am talking about the 'pirate' or 'clandestine' broadcasters of the world! Now *this* is the challenge to end all challenges...

So what is a pirate broadcaster? Who are they, and where are they?

The first question is relatively easy to answer, although it covers a pretty broad spectrum. By rough definition, a pirate broadcaster is a person or a group who broadcast on any given band illegally, thus they do not have a licence to operate within that band. Remember the bad ol' days, or good ol' days of CB depending on your viewpoint? Most, if not every man, woman, cat and dog were unlicensed, hence they were operating illegally and were for all intents and purposes 'pirates'.

But the pirate broadcasters we are talking about here is not little Johnny down on the corner with his walkie-talkie going hell for leather calling 'breaker, breaker, good buddy' — rather, these pirates span the airwaves broadcasting much like a 'normal' broadcast station would do. Some play music, some comedy, and some are politically orientated in operation. But they all have one common link amongst them — that is, they broadcast illegally, without a licence.

Who they are is a more difficult question to answer. Pirate broadcasters come from all walks of life. Some are blatantly pushing a particular barrow, such as politically motivated stations that you can hear pop up during times of upheaval and unrest. The common misconception that they are teenagers experimenting could not be further from the truth, as most are well into adulthood, and possess pretty good technical skills to boot. Some even go on — as is the case many times in the USA — to be legitimate station engineers/jocks for legit broadcasting stations.

And as for the 'where are they' question... well, unfortunately for Australian monitors, most pirates are US- or UK-based. This only adds to the challenge of receiving them here, but don't despair because where there is a will, there is a way! And it is indeed possible to receive the melodic sounds of pirate broadcasting stations from the shores of good ol' Oz.

So let us together explore the world of the pirate broadcaster and embark on a guided tour through some of the more famous pirates, right through to the not so well known. If you can get hold of some of

the books by the late, and most definitely great, Arthur Cushen, you will have some very good reference material to go by. A word of warning here — for the newcomers to the pirate scene, don't rely too heavily on printed frequency lists. What may be the frequency of choice one day, won't necessarily be used the next. So your best bet is to have a firm grip on the VFO at all times.

Forget VHF FM pirates — you're going to have to outlay some fancy money for some fancy equipment to even have a hope, and then some... Basically FM, unless conditions are super-extraordinary and you have some pretty neat looking Yagis stacked up, is going to be next to useless in this region of the world. So for the most part, we'll concentrate on those pirates who utilise the medium wave and short-wave bands for their broadcasts. Although from time to time we will be bringing you detailed information on some FM installations.

Most of you would probably know some of the more famous pirates of the airwaves, and maybe not even have realised they were indeed pirate broadcasters, due to their sheer professionalism and slick broadcasting techniques. Undoubtedly, two of the most famous of all the pirates would have to be UK's **Radio Caroline** and the USA's **Radio USA**. Running high power transmitters, in the region of 35 kilowatts, they were a force to be reckoned with — and their signals travelled the globe far and wide.

Radio Caroline, of course, was one of the pirates of the sea, broadcasting from the MV Caroline I believe in international waters just off the UK coast — thus effectively avoiding authorities. Rather than go 'in depth' on the Caroline and Radio USA stories, I strongly suggest you seek out your June 1998 copies of R&C and check out John Batty's astonishing expose into these well-known pirates, plus many others, some long gone. Just out of interest, some of you may be amused to know that some of the Caroline crew ended up working for BBC Radio!! Not bad eh?

So what do we hope to cover here in the months to come? Well, right off I said to the editor, this won't be just a loggings column! But hell, if you do hear some pirates, let us know the date, time and freq so others may have a go at listening too, and we can add them at the end of each column. Just send your

loggings to the E-mail address at the bottom of this column. What we hope to bring you is a monthly insight into pirate broadcasting, covering such varied topics as station interviews, equipment reviews, antenna design and how it all goes together.

Also we will, via this column, keep you up-to-date on the Netherlands pirate/underground scene, thanks to Lex, who you will met in the next issue! Lex will be providing all the NL goss as far as the pirate scene goes for the column, and I will bring it to you each month. How about news on the Irish or German scenes? Sound good? Well, that's all coming too, so keep an eye out for the mag each month, because if you're into chasing pirates around the dial we will give you all the latest news plus more...

There is much more involved in setting up a good station than just running down to Dick Smith's and grabbing a mixer, tape deck and what have you, hooking it up to a old ham rig and going for it. Although that may be how a lot start, they certainly don't stay that way for very long at all. With the constant quest to improve their signals and audio, the upgrade trail is continuous. Today's pirates take pride in their broadcasting... well, most do, and they strive to produce a quality program with a quality signal and audio to match — some of them could be easily mistaken for professional broadcast station if you walked inside their abodes.

Believe it or not, even Australia has had its share of pirates over the years, with two pirate broadcasters I know, one of whom was last known to be broadcasting from the Mt Gambier area in South Australia! Unlike the USA, detection of pirates in Australia is a relatively easy affair, thus Australia doesn't see the prolific spread of pirates as is the case in the States.

Well that's about it for this time 'round, so join me again next month when we take a close look at a pirate broadcasting station from the Netherlands and ask all the juicy questions the others never dared to.

Until then, Cheers and happy listening from Stewart. E-mail stew@radiomag.com

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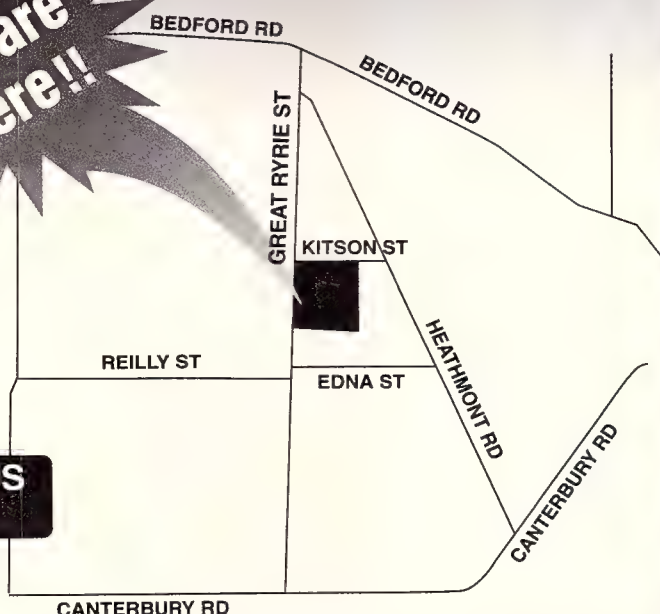
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The RADIOMAG free club announcement page. Call the Editor for details.

Liftout frequency guide

Compiled by Chris Edmondson

This month: World CB frequencies; Australian TV channels

Here we have a nice big centre-page spread just *begging* for something useful to readers to be placed on it! What better than a handy chart of frequencies of interest to buffs on *both* sides of the Tasman?

The data presented here comes from a variety of sources, and we thank those who dug it all up for us. You know who you are! But thanks to its various origins, we can't take all the credit for it — which also means we're not to blame if any of the listings are wrong, okay?!

Each month, we'll present an ever-more-ambitious guide to you. Next month, for instance, look out for the **Complete Scanner Guide to Sydney Airport and Environs**. That's a long-winded way of saying we're going to find *every* service at the country's busiest airport and put the whole flaming lot in the one spot for you!

So look out next issue for our map showing roughly where everything is, plus a comprehensive listing of some of the most delectable services in the entire Sydney region!

International CB allocations

All frequencies are in MHz.

Australia; 11 metres

Ch1 26.965; Ch2 26.975; Ch3 26.985; Ch4 27.005; Ch5 27.015; Ch6 27.025; Ch7 27.035; Ch8 27.055; Ch9 27.065; Ch10 27.075; Ch11 27.085; Ch12 27.105; Ch13 27.115; Ch14 27.125; Ch15 27.135; Ch16 27.155; Ch17 27.165; Ch18 27.175; Ch19 27.185; Ch20 27.205; Ch21 27.215; Ch22 27.225; Ch23 27.235; Ch24 27.255; Ch25 27.245; Ch26 27.265; Ch27 27.275; Ch28 27.285; Ch29 27.295; Ch30 27.305; Ch31 27.315; Ch32 27.325; Ch33 27.335; Ch34 27.345; Ch35 27.355; Ch36 27.365; Ch37 27.375; Ch38 27.385; Ch39 27.395; Ch40 27.405

Notes:

- This former channel is no longer available; it was Ch16 in the old 18ch scheme: 27.195
- Channel 8 is the "road channel"
- Channel 9 is the "emergency channel"
- Channel 11 is the AM calling channel
- Channel 16 is the SSB calling channel - LSB

Australia; UHF

Ch1 476.425; Ch2 476.450; Ch3 476.475; Ch4 476.500; Ch5 476.525; Ch6 476.550; Ch7 476.575; Ch8 476.600; Ch9 476.625; Ch10 476.650; Ch11 476.675; Ch12 476.700; Ch13 476.725; Ch14 476.750; Ch15 476.775; Ch16 476.800; Ch17 476.825; Ch18 476.850; Ch19 476.875; Ch20 476.900; Ch21 476.925; Ch22 476.950; Ch23 476.975; Ch24 477.000; Ch25 477.025; Ch26 477.050; Ch27 477.075; Ch28 477.100; Ch29 477.125; Ch30 477.150; Ch31 477.175; Ch32 477.200; Ch33 477.225; Ch34 477.250; Ch35 477.275; Ch36 477.300; Ch37 477.325; Ch38 477.350; Ch39 477.375; Ch40 477.400

Notes:

- Ch1 to Ch8 are repeater outputs linked to Ch31 to Ch38.
- Ch5 emergency channel. No other traffic permitted.
- Ch11 is the simplex calling channel.
- Ch40 is the road / truckies channel

New Zealand

Ch1 AM 26.330, Ch2 AM 26.340, Ch3 AM 26.350, Ch4 AM 26.370, Ch5 AM 26.380, Ch6 AM 26.390, Ch7 AM 26.400, Ch8 AM 26.420, Ch9 AM 26.430, Ch10 AM 26.440, Ch11 AM 26.450, Ch12 AM 26.470, Ch13 AM 26.480, Ch14 AM 26.490, Ch15 AM call/emerg 26.500, Ch16 AM call / emerg 26.520, Ch17 AM call / emerg 26.530, Ch18 AM call/emerg 26.540, Ch19 AM call / emerg 26.550, Ch20 AM call / emerg 26.570, Ch21 AM call/emerg 26.580, Ch22 AM call / emerg 26.590, Ch23 AM call / emerg 26.620, Ch24 SSB 26.600, Ch25 SSB 26.610, Ch26 SSB 26.630, Ch27 SSB 26.640, Ch28 SSB 26.650, Ch29 SSB 26.660, Ch30 SSB 26.670, Ch31 SSB 26.680, Ch32 SSB 26.690, Ch33 SSB 26.700, Ch34 SSB 26.710, Ch35 DX calling channel LSB 26.720, Ch36 SSB 26.730, Ch37 SSB 26.740, Ch38 SSB 26.750, Ch39 SSB 26.760, Ch40 SSB 26.770

Note: the modes specified above are the only modes permitted on the various channels.

Indonesia

142.050, 142.075, 142.100, 142.125, 142.150, 142.175, 142.200, 142.225, 142.250, 142.275, 142.300, 142.325, 142.350, 142.375, 142.400, 142.425, 142.450, 142.475, 142.500, 142.525, 142.550, 142.575, 142.600, 142.625, 142.650,

142.675, 142.700, 142.725, 142.750, 142.775, 142.800, 142.825, 142.850, 142.875, 142.900, 142.925, 142.950, 142.975, 143.000, 143.025, 143.050, 143.075, 143.100, 143.125, 143.150, 143.175, 143.200, 143.225, 143.250, 143.275, 143.300, 143.325, 143.350, 143.375, 143.400, 143.425, 143.450, 143.475, 143.500, 143.525

Thailand CB

78.000, 78.0125, 78.025, 78.0375, 78.050, 78.0625, 78.075, 78.0875, 78.100, 78.1125, 78.125, 78.1375, 78.150, 78.1625, 78.175, 78.1875, 78.200, 78.2125, 78.225, 78.2375, 78.250, 78.2625, 78.275, 78.2875, 78.300, 78.3125, 78.325, 78.3375, 78.350, 78.3625, 78.375, 78.3875, 78.400, 78.4125, 78.425, 78.4375, 78.450, 78.4625, 78.475, 78.4875, 78.500, 78.5125, 78.525, 78.5375, 78.550, 78.5625, 78.575, 78.5875, 78.600, 78.6125, 78.625, 78.6375, 78.650, 78.6625, 78.675, 78.6875, 78.700, 78.7125, 78.725, 78.7375, 78.750, 78.7625, 78.775, 78.7875, 78.800, 78.8125, 78.825, 78.8375, 78.850, 78.8625, 78.875, 78.8875, 78.900, 78.9125, 78.925, 78.9375, 78.950, 78.9625, 78.975, 78.9875, 79.000, 79.0125, 79.025, 79.0375, 79.050, 79.0625, 79.075, 79.0875, 79.100, 79.1125, 79.125, 79.1375, 79.150, 79.1625, 79.175, 79.1875, 79.200, 79.2125, 79.225, 79.2375, 79.250, 79.2625, 79.275, 79.2875, 79.300, 79.3125, 79.325, 79.3375, 79.350, 79.3625, 79.375, 79.3875, 79.400, 79.4125, 79.425, 79.4375, 79.450, 79.4625, 79.475, 79.4875, 79.500, 79.5125, 79.525, 79.5375, 79.550, 79.5625, 79.575, 79.5875, 79.600, 79.6125, 79.625, 79.6375, 79.650, 79.6625, 79.675, 79.6875, 79.700, 79.7125, 79.725, 79.7375, 79.750, 79.7625, 79.775, 79.7875, 79.800, 79.8125, 79.825, 79.8375, 79.850, 79.8625, 79.875, 79.8875, 79.900, 79.9125, 79.925, 79.9375, 79.950, 79.9625, 79.975, 79.9875, 245.000, 245.0125, 245.025, 245.0375, 245.050, 245.0625, 245.075, 245.0875, 245.100, 245.1125, 245.125, 245.1375, 245.150, 245.1625, 245.175, 245.1875, 245.200, 245.2125, 245.225, 245.2375, 245.250, 245.2625, 245.275, 245.2875, 245.300, 245.3125, 245.325, 245.3375, 245.350, 245.3625, 245.375, 245.3875, 245.400, 245.4125, 245.425, 245.4375, 245.450, 245.4625, 245.475, 245.4875, 245.500, 245.5125, 245.525, 245.5375, 245.550, 245.5625, 245.575, 245.5875,

245.600, 245.6125, 245.625, 245.6375,
245.650, 245.6625, 245.675, 245.6875,
245.700, 245.7125, 245.725, 245.7375,
245.750, 245.7625, 245.775, 245.7875,
245.800, 245.8125, 245.825, 245.8375,
245.850, 245.8625, 245.875, 245.8875,
245.900, 245.9125, 245.925, 245.9375,
245.950, 245.9625, 245.975, 245.9875,
246.000, 246.0125, 246.025, 246.0375,
246.050, 246.0625, 246.075, 246.0875,
246.100, 246.1125, 246.125, 246.1375,
246.150, 246.1625, 246.175, 246.1875,
246.200, 246.2125, 246.225, 246.2375,
246.250, 246.2625, 246.275, 246.2875,
246.300, 246.3125, 246.325, 246.3375,
246.350, 246.3625, 246.375, 246.3875,
246.400, 246.4125, 246.425, 246.4375,
246.450, 246.4625, 246.475, 246.4875,
246.500, 246.5125, 246.525, 246.5375,
246.550, 246.5625, 246.575, 246.5875,
246.600, 246.6125, 246.625, 246.6375,
246.650, 246.6625, 246.675, 246.6875,
246.700, 246.7125, 246.725, 246.7375,
246.750, 246.7625, 246.775, 246.7875,
246.800, 246.8125, 246.825, 246.8375,
246.850, 246.8625, 246.875, 246.8875,
246.900, 246.9125, 246.925, 246.9375,
246.950, 246.9625, 246.975, 246.9875

UK and Europe

CEPT CB - used in UK & Europe: 26.965,
26.975, 26.985, 27.005, 27.015, 27.025,
27.035, 27.055, 27.065, 27.075, 27.085,
27.105, 27.115, 27.125, 27.135, 27.155,
27.165, 27.175, 27.185, 27.205, 27.215,
27.225, 27.235, 27.245, 27.255, 27.265,
27.275, 27.285, 27.295, 27.305, 27.315,
27.325, 27.335, 27.345, 27.355, 27.365,
27.375, 27.385, 27.395, 27.405

UK only, FM only

27.60125, 27.61125, 27.62125, 27.63125,
27.64125, 27.65125, 27.66125, 27.67125,
27.68125, 27.69125, 27.70125, 27.71125,
27.72125, 27.73125, 27.74125, 27.75125,
27.76125, 27.77125, 27.78125, 27.79125,
27.80125, 27.81125, 27.82125, 27.83125,
27.84125, 27.85125, 27.86125, 27.87125,
27.88125, 27.89125, 27.90125, 27.91125,
27.92125, 27.93125, 27.94125, 27.95125,
27.96125, 27.97125, 27.98125, 27.99125

UK UHF CB - now discontinued:

934.0000, 934.0125, 934.0625, 934.1125,
934.1625, 934.2125, 934.2625, 934.3125,
934.3625, 934.4125, 934.4625, 934.5125,
934.5625, 934.6125, 934.6625, 934.7125,
934.7625, 934.8125, 934.8625, 934.9125,
934.9625

Australian TV channels

Ch0 - primary sound 51.75000
Ch0 - secondary sound 51.99219
Ch0 - vision 46.25000
Ch1 - primary sound 62.75000
Ch1 - secondary sound 62.99220
Ch1 - vision 57.25000
Ch2 - primary sound 69.75000
Ch2 - secondary sound 69.99220
Ch2 - vision 64.25000
Ch3 - primary sound 91.75000
Ch3 - secondary sound 91.99220

Ch3 - vision 86.25000
Ch4 - primary sound 100.75000
Ch4 - secondary sound 100.99220
Ch4 - vision 95.25000
Ch5 - primary sound 107.75000
Ch5 - secondary sound 107.99220
Ch5 - vision 102.25000
Ch5a - primary sound 143.75000
Ch5a - secondary sound 143.99220
Ch5a - vision 138.25000
Ch6 - primary sound 180.75000
Ch6 - secondary sound 180.99220
Ch6 - vision 175.25000
Ch7 - primary sound 187.75000
Ch7 - secondary sound 187.99220
Ch7 - vision 182.25000
Ch8 - primary sound 194.75000
Ch8 - secondary sound 194.99220
Ch8 - vision 189.25000
Ch9 - primary sound 201.75000
Ch9 - secondary sound 201.99220
Ch9 - vision 196.25000
Ch10 - primary sound 214.75000
Ch10 - secondary sound 214.99220
Ch10 - vision 209.25000
Ch11 - primary sound 221.75000
Ch11 - secondary sound 221.99220
Ch11 - vision 216.25000
Ch28 - primary sound 532.75000
Ch28 - secondary sound 532.99220
Ch28 - vision 527.25000
Ch29 - primary sound 539.75000
Ch29 - secondary sound 539.99220
Ch29 - vision 534.25000
Ch30 - primary sound 546.75000
Ch30 - secondary sound 546.99220
Ch30 - vision 541.25000
Ch31 - primary sound 553.75000
Ch31 - secondary sound 553.99220
Ch31 - vision 548.25000
Ch32 - primary sound 560.75000
Ch32 - secondary sound 560.99220
Ch32 - vision 555.25000
Ch33 - primary sound 567.75000
Ch33 - secondary sound 567.99220
Ch33 - vision 562.25000
Ch34 - primary sound 574.75000
Ch34 - secondary sound 574.99220
Ch34 - vision 569.25000
Ch35 - primary sound 581.75000
Ch35 - secondary sound 581.99220
Ch35 - vision 576.25000
Ch36 - primary sound 588.75000
Ch36 - secondary sound 588.99220
Ch36 - vision 583.25000
Ch37 - primary sound 595.75000
Ch37 - secondary sound 595.99220
Ch37 - vision 590.25000
Ch38 - primary sound 602.75000
Ch38 - secondary sound 602.99220
Ch38 - vision 597.25000
Ch39 - primary sound 609.75000
Ch39 - secondary sound 609.99220
Ch39 - vision 604.25000
Ch40 - primary sound 616.75000
Ch40 - secondary sound 616.99220
Ch40 - vision 611.25000
Ch41 - primary sound 623.75000
Ch41 - secondary sound 623.99220
Ch41 - vision 618.25000
Ch42 - primary sound 630.75000
Ch42 - secondary sound 630.99220
Ch42 - vision 625.25000
Ch43 - primary sound 637.75000
Ch43 - secondary sound 637.99220
Ch43 - vision 632.25000
Ch44 - primary sound 644.75000

Ch44 - secondary sound 644.99220
Ch44 - vision 639.25000
Ch45 - primary sound 651.75000
Ch45 - secondary sound 651.99220
Ch45 - vision 646.25000
Ch46 - primary sound 658.75000
Ch46 - secondary sound 658.99220
Ch46 - vision 653.25000
Ch47 - primary sound 665.75000
Ch47 - secondary sound 665.99220
Ch47 - vision 660.25000
Ch48 - primary sound 672.75000
Ch48 - secondary sound 672.99220
Ch48 - vision 667.25000
Ch49 - primary sound 679.75000
Ch49 - secondary sound 679.99220
Ch49 - vision 674.25000
Ch50 - primary sound 686.75000
Ch50 - secondary sound 686.99220
Ch50 - vision 681.25000
Ch51 - primary sound 693.75000
Ch51 - secondary sound 693.99220
Ch51 - vision 688.25000
Ch52 - primary sound 700.75000
Ch52 - secondary sound 700.99220
Ch52 - vision 695.25000
Ch53 - primary sound 707.75000
Ch53 - secondary sound 707.99220
Ch53 - vision 702.25000
Ch54 - primary sound 714.75000
Ch54 - secondary sound 714.99220
Ch54 - vision 709.25000
Ch55 - primary sound 721.75000
Ch55 - secondary sound 721.99220
Ch55 - vision 716.25000
Ch56 - primary sound 728.75000
Ch56 - secondary sound 728.99220
Ch56 - vision 723.25000
Ch57 - primary sound 735.75000
Ch57 - secondary sound 735.99220
Ch57 - vision 730.25000
Ch58 - primary sound 742.75000
Ch58 - secondary sound 742.99220
Ch58 - vision 737.25000
Ch59 - primary sound 749.75000
Ch59 - secondary sound 749.99220
Ch59 - vision 744.25000
Ch60 - primary sound 756.75000
Ch60 - secondary sound 756.99220
Ch60 - vision 751.25000
Ch61 - primary sound 763.75000
Ch61 - secondary sound 763.99220
Ch61 - vision 758.25000
Ch62 - primary sound 770.75000
Ch62 - secondary sound 770.99220
Ch62 - vision 765.25000
Ch63 - primary sound 777.75000
Ch63 - secondary sound 777.99220
Ch63 - vision 772.25000
Ch64 - primary sound 784.75000
Ch64 - secondary sound 784.99220
Ch64 - vision 779.25000
Ch65 - primary sound 791.75000
Ch65 - secondary sound 791.99220
Ch65 - vision 786.25000
Ch66 - primary sound 798.75000
Ch66 - secondary sound 798.99220
Ch66 - vision 793.25000
Ch67 - primary sound 805.75000
Ch67 - secondary sound 805.99220
Ch67 - vision 800.25000
Ch68 - primary sound 812.75000
Ch68 - secondary sound 812.99220
Ch68 - vision 807.25000
Ch69 - primary sound 819.75000
Ch69 - secondary sound 819.99220
Ch69 - vision 814.25000

• C • B • • NOTES •

Well I did not expect to be asked here to do this column, but here I am for better or worse. I am not sure which, but time will tell...!

My particular interest in radio is seeing what I can achieve with an 11 metre CB box. As we have read in another time, the answer to that is quite a lot! Having said that, I have not been really active over the past few weeks, but I am sure that will have to change... There's lots of info to collect and lots of listening to do to make this 11 metre column possible. Of course, I hope you will help out with as much feedback as you can supply.

The best way to get the news to me is via E-mail. My internet E-mail address is cb@radiomag.com. Please feel very welcome to write!

The band seems to a little quieter in my opinion than this time last year! Has the cycle peaked? At the beginning of last year, here in Melbourne, the band had much longer openings, and much stronger signals. In the early morning we could hear big signals via the long path to Europe, but I have not heard any big signals this year via the long path at sunrise. Even the usual openings to Africa, Europe and South America have been not as good... maybe I need to change my antenna hi!

The 11m group scene

The Australian chapter of the *Delta Tango* group seems to be growing very quickly here in Australia; there were not many Delta Tangos in 43 div heard around the band 12 months ago, so this group sure is growing here...

Sugar Delta group, but hang on — which SD group? There is some strong information that the majority of the Sugar Delta members in Australia have moved over to the stronger, larger side, being the French/English SD Group. But after a short time in making the move it seems like there is big disappointment... Yet again there is trouble in the Australian SD camp, with some members not happy with the politics and receiving no correspondence from the new committee members. Time will tell for this large DX group.

QSLing

While the majority of QSL Managers give excellent service, with returns as soon as possible, it seems some don't. Even if you have included the 'contribution', there are times when you simply don't receive your QSL. Most go by the accepted groups rules, which says you resend, try an E-mail, and so on, but sometimes you still don't get a reply. To me this is offensive.

By looking through the lists of some operators there is a pattern. No way can these all be lost in the post! The same QSL Managers and operator names always come up. What's more, if you look at certain groups there is a pattern.

Most of the popular DX groups have a 'blacklist manager'.

Consult them with your problem, and in most cases you will receive your card very quickly after contacting them.

If operators avoided QSL Managers and replied direct, the QSL Manager would be redundant, so it must be in their interests to keep the operators happy.

I know we all take the chance when we send, but some of us are collectors of divisions flag cards and IOTA cards, and when I send out I expect a reply in a reasonable time.

As I have said, most QSL Managers work 100 per cent for the group they represent and I respect their work.

Around and about the band

Falkland Islands, signing as 198AT/O, has been active and caused quite a stir some stations here trying very hard to work them with no luck. Apparently they worked fewer than 10 stations here in Australia.

It was quite amazing that our neighbours in 41 div and 172 div were receiving them on 5/7 reports, but here in Oz we struggled to hear them if at all. For those who did make it, the QSL route is 14 AT 276, Dimitri, PO Box 5, 45270 Ladon, France.

Please feel very free to write to me by E-mail with your loggings and band notes. Write to cb@radiomag.com. 73 from 43SD010 Abe, QSL Manager for 130SD101, 130SD102, 130SD103.

Note that you can find the 130SD/DX log at <http://members.fortunecity.com/sdaustrian/130/130LOG.html>

Coming activations or on air now...

| Callsign | Country | Start | End | Manager |
|--------------|--------------------------------|----------|------------|--|
| 11RMA/DX | Puerto Rico | 2/1 | 1000 Prog. | Paco, PO Box 4109, 03080 Alicante, Spain |
| 22FAT/O | French Guyana | 1/01 | 1000 Prog. | Eric, PO Box 271, 67606 Selestat, cdx, France |
| 24FRI/DX | Panama | 11/00 | | 14FRI001, Thierry, PO Box 2, 69682 Chassieu-CDX, France |
| 24RB/DX | Panama | 11/00 | 1000 Prog. | Renato, PO Box 124, 25100 Brescia, Italy |
| 25/13IR102 | Japan | 25/1/01 | 4/3/01 | Lars, PO Box 1410, 91142 Roth, Germany |
| 27IR/O | Iceland | 4/3/01 | 23/3/01 | Thomas, PO Box 12, 8382 Hinnerup, Denmark |
| 28/2DC010 | Honduras | 11/00 | | Dick, 1101 Hunter Street, Texas City, 77590 USA |
| 28RC/DX | Honduras | 11/00 | 1000 Prog. | 14RC02 Carine |
| 37RC/O | Dominican Rep. | 11/00 | 1000 Prog. | 15RC014 John |
| 57TRC/DX | India | 27/12/00 | | 178TRC01, Nasko |
| 67RB/DX | Paraguay | 11/00 | 1000 Prog. | Renato, PO Box 124, 25100 Brescia, Italy |
| 101/161AT514 | Papua New Guinea | 8/2/01 | 8/3/01 | Arek, PO Box 1214, 50-986 Wroclaw-44, Poland |
| 122SD/DX | Barbados | 11/00 | | Franca, PO Box 1, 23879 Verderio Inferiore, Lecco, Italy |
| 126/2DC010 | Nicaragua | 11/00 | | Dick, 1101 Hunter Street, Texas City 77590, USA |
| 131IR/DX | Guyana | 11/00 | | 121 IR 391, James, PO Box 55625, Nassau, Bahamas |
| 133IR/DX | Nth Marianas Islands | 1/1/01 | 1000 Prog. | Rob, PO Box 22, 3140AA Maasluis, Netherlands |
| 133RC/DX | Nth Marianas Islands | 11/00 | 1000 Prog. | 14RC019 |
| 146RC/DX | Algeria | 11/00 | 1000 Prog. | 14RC018 Eric |
| 147/30AT414 | Tunisia | 23/3/01 | 4/4/01 | 30AT277, Maria, PO Box 198, 33080 Oviedo, Spain |
| 147PAS/DX | Tunisia | 11/00 | | Pablo, PO Box 422, 33080 Oviedo, Spain |
| 148AT/O | Ascension Isl. | 10/2/01 | 20/2/01 | 1 AT 070, Simon, PO Box 178, 70056 Molfetta (BA), Italy |
| 148IR/O | Ascension Island | 12/00 | 1000 Prog. | Herbert, PO Box 8, 5351 Aigen, Austria |
| 155FAT/O | Taiwan | 2/1 | 1000 Prog. | Laurent, PO Box 63, 56854 Caudan, cdx, France |
| 198AT/DX | Falkland Isl. | 20/2/01 | 25/2/01 | 1 AT 070, Simon, PO Box 178, 70056 Molfetta (BA), Italy |
| 218/2DC010 | Belize | 11/00 | | Dick, 1101 Hunter Street, 77590 Texas City, USA |
| 224RC/O | Western Kiribati | soon | | 14RC041 |
| 224SD/DX | Western Kiribati | soon | | 49 SD 015, Biel PO Box 444, 07300 Inca, Mallorca, Spain |
| 236AT/O | Bangladesh | 15/2/01 | 24/2/01 | 1 AT 070, Simon, PO Box 178, 70056 Molfetta (BA), Italy |
| 283DT/O | St. Christopher & Nevis Island | soon | | Javier, PO Box 191, 30110 C.Torres, Spain |
| 315WD/DX | Ukraine | soon | | Alberto, PO Box 8, 50065 Pontassieve (FI), Italy |
| 325SD/DX | Rotuma Isl. | soon | | 49 SD 015, Biel PO Box 444, 07300 Inca, Mallorca, Spain |
| 325TD/DX | Rotuma | soon | | Oscar, PO Box 101, 28830 San Fernando, Spain |

...from Page 9

Olympic UHF Handback

The entire 70cm spectrum 'borrowed' from amateurs has been restored. The 440-450MHz section was returned in November last year, while the lower part remained not-for-use until January 1. Now... how long will it last?

Australian Naval Amateur Radio Society

The Australian Naval Amateur Radio Society has recently changed its daily HF net times to provide better coverage.

The daily 40 metre net on 7075 kHz now commences at 0600 UTC, followed by the daily 20 metre net on 14,275 kHz at 0630 UTC. Don't forget the weekly ANARS 80 metre SSB net on 3620 kHz, Wednesday nights at 0930 UTC and the weekly 80 metre CW net on 3532 kHz, Monday nights at 0930 UTC.

Visitors are always most welcome on the ANARS nets, whether you have an interest in things maritime, or are just bemused by their banter. The Australian Naval Amateur Radio Society is the Australian society for amateurs and short wave listeners with a professional maritime background.

Further information about the society can be obtained from the Secretary, Arthur VK2AGN, who is listed in the callbook, or by E-mail to anars@qsl.net. Or you should feel free to drop by the ANARS web page at <http://www.qsl.net/anars>.

New Associate Membership available to Old Timers Club

For a number of years the requirement for membership of the Radio Amateurs Old Timers Club Australia has been to have held, or been qualified to hold, an amateur radio licence for a minimum of 25 years.

Bearing in mind the number of operators who have taken up the hobby of amateur radio relatively late in life due to pressure of family or business, it has been decided to create a grade of associate membership of the Club.

The qualifications for Associate Membership are to be aged 60 years or more, and to have held, or been qualified to hold, an amateur operator's licence for a minimum of 10 years.

Associate Members will receive the two issues of the Club's magazine, OTN, which is published in March and September of each year, but will not be entitled to vote or hold office in the Club. Full membership will be automatic when the 25-year target is reached, provided, of course, that subscriptions are up to date.

Current subscriptions, which fall due on April 1 each year, are a joining fee of \$2.50 and an annual subscription of \$8 (or \$15 for two years).

Life Membership is available for \$100.

This Month's Clever Trick

To inspire you for the first Readers Write competition, these are the nominees for the Chevy Nova Award. This is given out in honour of GM's fiasco in trying to market this car in Central and South America. "No va", of course, means in Spanish, "it doesn't go".

1. The Dairy Association's huge success with the campaign "Got Milk?" prompted them to expand advertising to Mexico. It was soon brought to their attention the Spanish translation read "Are you lactating?"

2. Coors put its slogan, "Turn It Loose," into Spanish, where it was read as "Suffer From Diarrhoea."

3. Scandinavian vacuum manufacturer Electrolux used the following in an American campaign: "Nothing sucks like an Electrolux."

4. Clairol introduced the "Mist Stick," a curling iron, into Germany only to find out that "mist" is slang for manure. Not too many people had a use for the "Manure Stick."

5. When Gerber started selling baby food in Africa, it used the same packaging as in the US, with the smiling baby on the label. Later the company learned that in Africa, companies routinely put pictures on the labels of what's inside, since many people can't read.

6. Colgate introduced a toothpaste in France called Cue — the same name as a notorious porno magazine.

7. An American T-shirt maker in Miami printed shirts for the Spanish market which promoted the Pope's visit. Instead of "I saw the Pope" (el Papa), the shirts read "I Saw the Potato" (la papa).

8. Pepsi's "Come Alive With the Pepsi Generation" somehow translated into "Pepsi Brings Your Ancestors Back From the Grave" in Chinese.

9. The Coca-Cola name in China was first read as "Kekoukela", meaning "Bite the wax tadpole" or "female horse stuffed with wax", depending on the dialect. Coke then researched 40,000 characters to find a phonetic equivalent "kokou kole", translating into "happiness in the mouth."

10. Frank Perdue's chicken slogan, "It takes a strong man to make a tender chicken" was translated into Spanish as "it takes an aroused man to make a chicken affectionate."

11. When Parker Pen marketed a ball-point pen in Mexico, its ads were supposed to have read, "It won't leak in your pocket and embarrass you." The company thought that the word "embarazar" (to impregnate) meant to embarrass, so the ad read: "It won't leak in your pocket and make you pregnant!"

12. When American Airlines wanted to advertise its new leather first class seats in the Mexican market, it translated its "Fly In Leather" campaign literally, which meant "Fly Naked" (vuela en cuero) in Spanish.

Application forms, complete with details of the Club's Constitution, are available from the Honorary Secretary, Arthur Evans, VK3VQ, 3/237 Bluff Road, Sandringham VIC 3191 on receipt of a stamped, self-addressed envelope.

Telephone enquiries will be welcomed by the Secretary, Arthur Evans VK3VQ, on (03) 9598 4262, or by the President, Allan Doble VK3AMD, on (03) 9570 4610.

Interesting Websites

• For info on underground antennas take a look at: <http://www.borderlands.com/newstuff/research/FelixRadio/FelixRadio.htm>

• Can't afford to buy a shortwave radio? Maybe you want to try before you buy? Want to listen to stations you normally can't hear? Then give this site a go, it's pretty impressive! <http://www.ralabs.com/webradio/>

• Monitoring Times Magazine <http://www.grove-ent.com/hmpgmt.html>

• Popular Communications Magazine <http://www.popular-communications.com/>

• While you're at the Popcomm site, take a look at the following links: 'Popcomm Information Centre'; then click on the 'Online Articles' link, as there's some good stuff there. Of special interest is a article on how to improve your chances at receiving a QSL card from broadcasters.

• Top 50 Scanning Websites <http://new.top-sitels.com/bestsites/k4lyp/topsites.html>

• Make Your Own High-Gain VHF/UHF Yagi <http://www.homestead.com/KK5UFO/>

New young ham club dies...

It was mentioned in the November issue of *Whachamacallit Magazine* that Dan Bartlett, VK4TDB was starting up a club for young hams. Due to both a lack of interest and personal reasons, this will now NOT go ahead.

By Steve Gregory VK3SIX/KL7SIX/7J1BAX,
serving the wider Pacific-Rim DX community
E-mail vk3otoradiomag.com

Information is obtained from many sources and all authors and owners of material are acknowledged where possible.

DX 2000 — the year that was...

According to some DX pundits, the year 2000 was an exciting year in the world of DX, with at least five of the top ten DXCC Entities — A5, 7O, BQ9P, E3, FR/T — on the air. And now, in 2001, we should see some pretty exciting DXpeditions, commencing with the following...

Bouvet Island 3YØC

US Astronaut Chuck Brady, N4BQW, landed in another new place recently with a group of South American scientists, but not on the moon. Somewhere just as remote, however — on the sub-Antarctic island of Bouvet Island.

Bouvet is ranked # 8 on the ARRL DXCC Most Wanted list with only three past DX operations from this rare island in the past 23 years, including 3V1VC and 3Y3CC (1977), 3Y1VC and 3Y5DQ (1978-79) and 3Y5X (1990). The island is located at 54°26' South 3°24' East, and lies 2574 kilometres (some 1600 miles) south south west of the Cape of Good Hope, in the South Atlantic Ocean according to the website. It measures just six by nine kilometres, and more than 90% of it is composed of ice. The only safe area to set up camp is on the west coast of the island.

Barry Fletcher, ZS1FJ, advises that Chuck will be on the island for three months and is very active on the air. Due to a terrible storm, the team had a horrific time getting all the equipment to the island. Chuck immediately set up a wire antenna, which ZS1CM, from Cape Town, made and donated to Chuck. Many ZS stations reported working 3YØC, who is QRV on all bands from 6 through 160 metres.

Chuck operates mostly SSB on his operations, but can and will do CW.

SSB frequencies are as follows:

| Band | Freq | Split |
|------|--------|-------------------------|
| 6 M | 50.120 | listen for instructions |
| 10 | 28.495 | 500-510 |
| 15 | 21.295 | 300-310 |
| 17 | 18.145 | 150-155 |
| 20 | 14.195 | 200-210 |
| 20 | 14.260 | 265-270 (Alt Freq) |
| 40 | 7.095 | listen for instructions |
| 80 | 3.795 | listen for instructions |

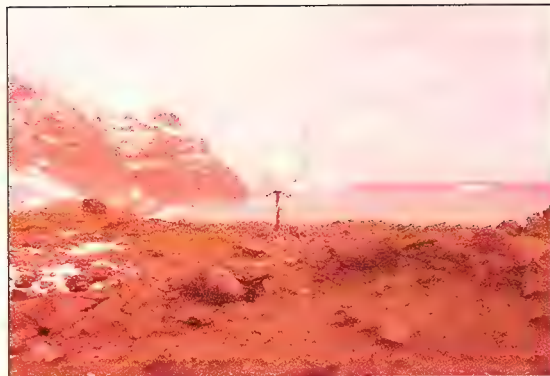
Dennis Wells, ZS1AU, is the pilot for this operation and Deon Erwin, ZR1DQ, has a web page at <http://www.qsl.net/zr1dq>. We downloaded the images on this page in mid February. Other information came via by W3UR at the *Daily DX*. <http://www.dailydx.com/>

"Chuck is a one man show as far as radio goes," according to the web site. "He had virtually no help in trying to get the antennas up. He put up the beam twice and it was torn down by the wind before he could use it.

"It was a wreck, and we really had strong reservations as to it ever getting up. He has been successful in getting up one short vertical for 10 metres.

"He has a 160, 80, 40 vertical that is working very well even on 15 and 20 metres, better than the G5RV. It stayed up until yesterday when it too crashed. He was able to get it back up. It has not been damaged thus far. We hope it holds up.

"We are trying to help him put something that will work out of the salvaged remains of the beam so as to at least get something up that is directional.



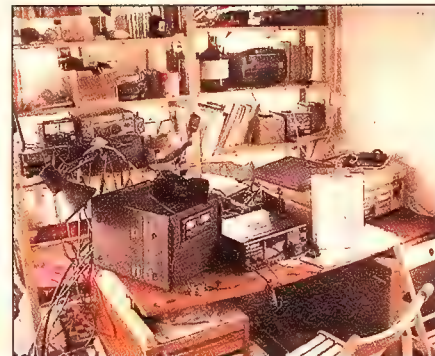
Satellite communications dome antenna in the background and wrecked Hexbeam antenna in front after 105 knot storm. How many more times can this poor antenna break and still work?

"Chuck came on 28.495 at 1320z today. He has the beam antenna up, and doing testing. It is 2-4 S-points stronger in all areas. IF it is able to withstand the winds, we will be able to work him much easier now. The beam antenna covers 14-28MHz."

For more information and further updates as they happen dial up <http://www.qsl.net/wd4nbg/3y0.htm>



Chuck Brady, N4BQW, standing next to the mast supporting the G5RV multiband dipole which was his first operational antenna. The radio shack is in the background, against a landscape which does not look very friendly. The image was captured by one of the expedition scientists with Chuck's digital camera.



Chuck, N4BQW's 3YØC hot seat. The HF transceiver is an Icom IC-756PRO and the linear amp is an Icom IC-PW1. The clipboard on the right contains the log where every station in the world wishes to see their callsign. Behind the clipboard is a black notebook computer used for RTTY.

DX a-la-carte

• Fiji, 3D2CQ. by Dan, N6PEQ, also South Cook Island, ZK1PEQ. Check Dan's website for any movement: <http://www.dxr.com/n6peq>

• San Ambrosio (nr Easter Is), CEØXT activity. They will be on the air between 10-18 February 2001 as CEØXT FG93wq. QSL manager is CE6TBN, PO Box 1234, Temuco, Chile. (Tnx CE6TBN/ CEØZ/ CEØXT)

A35BQ/ZK2BQI Pacific trip

Angelo, I6BQI has been touring the Pacific on a six week cruise starting the first week in February, 2001. He plans to operate from Tonga as A35BQ, from Niue as ZK2BQI and, if he can get the licences, from YJ, 5W, C2 and T3 as well.

Singapore, 9V1UV

Selva, 9V1UV has had his 6m permission extended until March 2001.

Thanks to Hatsuo, JA1VOK, for this news.

XX9 to be a deleted country?

"QRZ DX" reports that Bob, W4VQ, has filed a petition to the DXCC and DXAC asking them to consider the removal of Macao (XX9) from the DXCC List in accordance with DXCC Rule 5. This comes as a result of Portugal turning Macao over to China, December 20, 1999. (QSP de OPDX Bulletin No. 492)

Benin, TY

F5CWU plans with other French hams to be active from TY on 6m and HF in August 2001 for two or three weeks. They are waiting the licences to know if there are restrictions on 6m.

Website: <http://perso.wanadoo.fr/f5cwu> then follow TY2001 link.

(Tnx UKSMG announcement pages.)

Morocco, CN

CN2DX will be QRV July 11 to August 1, on HF with 100w and dipole, 50 MHz 100w and dipole. Callsign to be used is HB9HLM/CN2DX.

Website: <http://radioamateurs.eicn.ch/cn2dx>

E-mail: hb9hlm@freesurf.ch

(QSP de UKSMG announcement pages.)

UK Sovereign Bases areas on Cyprus, ZC4

Steve, ZC4BS reports that the ZC4 club station is up and running as ZC4ESB (Eastern Sovereign Base). The station will be operated by Steve ZC4BS, Des ZC4DW and Graham ZC4GK. They will be active for the next three years, and hopefully a little longer on all bands 160-6 metres and on all modes. Des and Steve are also keen contesters and will be participating in most contests.

(QSP de OPDX #490)

The OZ DX Bulletin DX calendar

| Call | Period | Operator/QSL/Remarks |
|-----------|--------------|-----------------------|
| A35BQ | Feb 2001 | I6BQI |
| C56/DL2OE | Feb20-Mar04 | DL2OE @ homecall |
| C56/DL7CM | Feb20-Mar04 | DL7CM @ homecall |
| C93AN | Mar17-Apr25 | C93AN & JA team |
| CN2DX | Jul11-Aug01 | CN2DX/HB9HLM @ HB9HLM |
| D68C | Feb8-28 | Int. team |
| JW.. | May31-June10 | JW3OHA a.o. |
| TY... | Aug 2001 | F5CWU a.o. |
| V47CA | Apr 9-24 | VE3BW |
| ZK2BQI | Feb 2001 | I6BQI |
| 3B6RF | May 5-18 | Int. team |
| 3D2.. | Feb18-27 | Balkan team |
| 3YØC | Dec16-Mar16 | N4BQW |

Notes from Various sources, courtesy of the OZDX Bulletin.

TV stations as propagation indicators?

TV stations are good indicators of Es or F2 propagation on 6m. However, it is difficult to know which TV station you are receiving, as conditions are often very selective and, as TV stations have high ERP, you usually hear them without hearing any radio amateurs. Anyway, when the TV signals are stronger than normal it is a reason to tune the band carefully for 6m stations, but do not forget that a DX station may show up without any TV signal at all!

TV DX can often be identified from its carrier frequency. However, it cannot be measured using the 'zero-beat' method. Use a convenient offset of around 300-1000 kHz in USB and measure that audio tone using a computer sound card with suitable software or an

audio freq meter across the speaker. Add the audio tone to the USB RF reading to get the TV carrier freq. For accuracy, and as a good check, do the same on WWV at 15 MHz and apportion the correction (x 48/15).

For more details on this item contact Ian ZS6BTE, by E-mail at itr@nan-oteq.co.za

Here are some prominent 'indicator' TV carrier frequencies:

| | |
|----------------|---------------------|
| 48.239.233 | Orebro, Sweden |
| 48.239.577-86 | Genting, Sempah |
| 48.239.590 | Nalchon, Ratchasima |
| 48.239.578-616 | South/West Iran |
| 48.242.180-217 | Muro, Portugal |
| 48.249.981-5 | West/Kenya |
| 48.250.080-087 | Dubai, UAE |
| 48.250.012 | new, Middle East |
| 48.250.110-122 | Madrid, Spain |
| 48.250.156-169 | Homs, Syria |
| 48.250.353-387 | Equatorial Guinea |
| 48.259.770-810 | Iran |
| 48.260.378 | Udonthani Nth/Thai |

The full database is on my website at <http://www.datafast.net.au/4217>

6M Beacon reports

YV4 Access via E-mail...

The YV4 boys have just set up a pager with E-mail capabilities, at 9105176@skytel.com.ve. It allows messages up to 256 characters long. It is switched on 24 hours a day. Please send an E-mail to the pager only if one of the following beacons is heard: YV4AB/B (50.025) YV1DIG/B (50.029) YV5LIX/B (50.045.6). Its owner's sleep hours are from 04z-12z, but he assures us he'll wake up if someone hears the beacons and need YV for a new one!

PY2AA/B GG66wj 50.059 MHz...

Now it uses two M2 halos stacked and the output power exceeds 40W. Reports to Fred, PY2XB, by E-mail to py2xb@50mhz.com

ZL1VHF 50.043 RF73KD

ZL1VHF operates on 50.043 from Whitford, 30km south east of Auckland, 220m AMSL. It's running 10 watts into a half-wave vertical. ID is ZL1VHF 6M WHITFORD, in CW. If you hear it, please E-mail tmoore@clear.net.nz.

ZL3MHB 50.055 RE57xx

ZL3MHB is now operating on 50.055MHz, LOC RE57 10km south of Greymouth. QRP 15W to a 1/4 wave

6M Beacon reports (continued)

Ground Plane. ZL3TY would appreciate any reception reports, particularly comparing signals with ZL3SIX. ZL3TY's E-mail is b_mcquarrie@minidata.co.nz

ZL3SIX/B 50.040Mhz RE66

E-mail z3tic@mycom.co.nz if you catch this one. Note also that the NZ 6 Metre home page is <http://www.mycom.co.nz/z3tic/z3tic.htm>

TG9RB/6 beacon

This is in the throes of being installed in EK44 at 6234 feet. Freq: 50.011 MHz, 30 watts, Ant a vertical for now. Operating soon, according to N6CA Chip, whose E-mail is n6ca@ham-radio.com

AH8A has a breakable beacon +on 50.095 100w to 4el.

4W6UN runs a beacon on 50.097 100w to a co-linear.

ZL3MHB now on 50.055, VK3SIX 50.0535+

The VK8VF beacon is back on 50.0577, VK4RGG 50.0570, VK7RAE 50.0567.

ZL1VHF jumps from 50.0417 to 50.043, ZL3SIX is on 50.040.

VK4RTL runs MCW on nominal 50.085 but tunes on 50.086 SSB? MCW is not an approved mode.

VK3SIX 28.253 has suffered PA failure after recent storm, off UFN.

QSL Routes

3D2AG Antoine DR Nyeurt, PO Box 14633 Suva, Fiji Islands.

9M6BAA OJ85ch: Black Sheep Hillview Gardens, Keringau, Sabah, East Malaysia

9M6BG Negeri Sabah OJ85: Brett Graham VS6BG/UP POB 12727 Hong Kong

9V1UV OJ11vh: KC Selvadurai, 13 Kheam Hock Rd. Singapore, 298787. E-mail 9v1uv@sarts.org.sg

AE4RO EL97tg: Tom Colyard, 2102 S/W Wayne St, Port St Lucie, Florida 34984, USA

AH8A Bill Faulkerson, PO Box 2567, Pago Pago, AS 96799. QSL via AC7DX

BG7OH OL72: Mars Liu, PO Box 020-73, Shan Zhen 518020, PR China.

BQ9P DXpedition 2000 Pratas Island. QSL via KU9C

BV2DP PL05: RWS Lu, PO Box 32-144, Taipei, Taiwan

BX2AB PL05: Chenpan Lee, PO Box 32-45, Taipei, Taiwan

DS1GQS PM37nm: Phil Man Kim, APT 27, Chamsii-dong, Sonpa-Ku, Seoul 188-225 South Korea

DS5IJG Shin, Dong-Jin, PO Box 90, 641-600 Changwon, South Korea

EY8CQ MM48: Alex Rubtsov, PO Box 126, Dushanbe 734025, Tajikistan

EY8MM MM48: Nodir, M Tursoon-Zadech, Tajikistan — via K1BV

HL2WA Lee Dong Kyu, #104-1007, Jukong APT, 550 Eunhaeng-2 Dong, Jungwon-ku, Seongnam, 462-152 Korea

HL3IUA Myung Duk Choi, 117-202 Kunyoung Villa, Hanyan Mall, 121 Kumi Dong, Bundang-Ku, Seongnam, Korea

HL5CL Yong Jeong Shin, PO Box 322,

Pusan 600-603, Republic of South Korea

HL5OC Chung Gyu-Ryeul, 273-39 Sangdaedong, Chin Ju 660-321, South Korea

HP2CWB FJ09bk: Jose NG Lee, PO Box 728, Colon, Republic of Panama

JR6GV c/o Vic Taira 2-21-1-7 Kumoji, Naha, Okinawa, Japan 900

K6MIO/KH6 BK29ks: Jim Kennedy, PO Box 1939 Hilo, Hawaii 96721, USA

KH6SX BL01: Art Seto, PO Box 896, Kailua, Hawaii 96734, USA (Ex NH6LT, AH6LR)

KH7L BL11: Rodney Tom, 2514 Akepa Street, Pearl City, Hawaii 96782, USA

KH7R BL01: Ken Hoppe, PO Box 31241, Honolulu, Hawaii 96820, USA

KL7NO BP54: Al Noe, PO Box 60574, Fairbanks, Alaska 99706, USA

LU7FA FF96: Ricardo Vidoret. PO Box 19, Arteaga, Santa Fe, Argentina

LU8MB FF57oc: Gerardo Ruiz, Colon 1081, Godoy Cruz 5501, Mendoza, Argentina

N0SRQ EN18vc: Ray Swick, RR1 Box 271, Thief River Falls, MN 56701, USA

N5JHV DM62: Dave Batcho, 5611 Desert Star, Las Cruces, NM 88005, USA

NN4X EL98: Steve Sacco, 5775 Jack Brack Rd, St Cloud, Florida 34771, USA

PJ2/WZ8D FK52: Curacao. QSL via W8GEX or WZ8D

T33RD RI49: QSL via OK1RD, Borova 155, 251-01 RICANY, CR.

T15BX EK70: Eduardo, PO Box 159, Sanata Barbara, CP 3009, Heredia, Costa Rica

TX0DX via OH2BN Chesterfield Reef DXpedition

V73AT RJ38: Tim McLaughlin Kwajeleln. Via K2CL

V8IAN QSL via VE6VK, Russ Wilson, 1235 Richland Road NE, Calgary AB, T2E 5M5

VE7AGJ CO96ng: Pat Flynn 8927 83A St, Fort St John, BC, Canada

VE8JL DP22: Joe La Ferla, 6153 Finlayson Drive Nth, Yellowknife, Canada

VK6HK QF78vc: Don Graham, 42 Purdom Road, Wembley Downs, WA 6019

VK6JQ PH12cc: Bill Webber, PO Box 808, Broome, WA 6725

VK9CK c/- VK6HK DE Graham, 42 Purdom Rd, Wembley Downs, WA 6019

VK9CZ c/- VK6KZ WJ Howse, 4 Renton St, Melville, WA 6156

VP6BR CG44: Pitcairn, PO Box 37, FIN-01361 Vantaa, Finland. Website <http://www.qsl.net/oh2br>

VR2LC OL72ch: Ken Kwok, PO Box 89381, Hong Kong

VR2XMT OL72bm: Charlie C. M. Ho, PO Box 80424, Cheung Sha Wan Post Office, HK

W3BTX/4 EL98: Robert G Gutshall, 2000 Evergreen Ct, Kissimmee, FL 34746-3081, USA

XE1/G0JHC DL70jk: Neil Carr, 15 Westlands, Leyland PR5 3XT, England

XE1BEF DK89: Hector Espinosa F, PO Box 231, Colima, Mexico 28000

XE1GRR DL80: Rafael Antonio Rocha Gomez, PO Box 1-1785 Guadalajara, Jalisco CP 44100

XE1J DK89: Jose Levy Clavel 333, Colima, COL 28030, Mexico

XE2EED DM12: Roman Flores Z, PO Box 100, Playas, Tijuana, BC 22200, Mexico.

YB0ARA/9 Phil David, Irian Jaya: via N2AU. Stuart Twadell, YJ8UU Port Vila Vanuatu: via ZL2HE. Web QSL site <http://www.datafast.net.au/4217/qslcards/YB0ARA.jpg>

YV4YC FK60fe: Benito Capobianco, PO Box 18, Maracay, 2101 Venezuela.

YV5LIX FK60: Jose Valdes, PO Box 68.195, Caracas, Venezuela.

ZL3JT Duncan McMahon, 15 Harling Ave, Christchurch 8002 NZ.

Credits to 425DX, DXNL, OPDX, UKSMG, SM7AED and the ARRL, WWDXC. Special thanks to the following for contributions of news The OZ50MHz DX Bulletin, K6FV, IW0BET, YV1DIG, CU3AN, AC4TO, K2RTH and G3WOS and the UK Six Metre Group. Distribution of material is granted by OZ6OM/OZ7M and also by SM7AED.

VK3OT is a life member of the ARRL and permitted to use member notes with credits where possible. VK3SIX/KL7SIX is also a member of the Western Washington DX Club, Seattle, Washington without whom these notes would be unavailable.

MORE USEFUL FREQUENCIES

Here are some more useful frequencies for you to have a look at.

The USA 11M CB ALLOCATIONS

Way back in the 1950s, the American FCC established the Citizens Band (CB) radio service. It intended to provide a group of channels so short-range communications could be conducted with inexpensive, low-power radio sets. The FCC envisioned a 'catch all' radio service for people to stay in touch from home to car, small business to delivery vehicle, and hunters and fishermen to use inexpensive hand-held sets to talk over short distances.

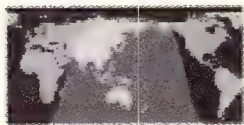
The FCC chose the frequency around 27MHz, which is located at the top of the high-frequency spectrum. They first assigned 23 channels, but the service became so popular that in the 1970s they added channels 24 through 40. The frequency assigned to each channel is listed below.

| | | | |
|----|--------|----|--------|
| 1 | 26.965 | 21 | 27.215 |
| 2 | 26.975 | 22 | 27.225 |
| 3 | 26.985 | 23 | 27.255 |
| 4 | 27.005 | 24 | 27.235 |
| 5 | 27.015 | 25 | 27.245 |
| 6 | 27.025 | 26 | 27.265 |
| 7 | 27.035 | 27 | 27.275 |
| 8 | 27.055 | 28 | 27.285 |
| 9 | 27.065 | 29 | 27.295 |
| 10 | 27.075 | 30 | 27.305 |
| 11 | 27.085 | 31 | 27.315 |
| 12 | 27.105 | 32 | 27.325 |
| 13 | 27.115 | 33 | 27.335 |
| 14 | 27.125 | 34 | 27.345 |
| 15 | 27.135 | 35 | 27.355 |
| 16 | 27.155 | 36 | 27.365 |
| 17 | 27.165 | 37 | 27.375 |
| 18 | 27.175 | 38 | 27.385 |
| 19 | 27.185 | 39 | 27.395 |
| 20 | 27.205 | 40 | 27.405 |

HF – 28MHz Marine channels

| | | |
|-----------|------------|-------------------------|
| 27.680MHz | Channel 68 | Commercial & Charter. |
| 27.720MHz | Channel 72 | Professional Fishermen. |
| 27.820MHz | Channel 82 | Professional Fishermen. |
| 27.860MHz | Channel 86 | Calling & Distress. |
| 27.880MHz | Channel 88 | Calling & Distress. |
| 27.900MHz | Channel 90 | Ship to Shore. |
| 27.910MHz | Channel 91 | Ship to Shore. |
| 27.940MHz | Channel 94 | Club Events. |
| 27.960MHz | Channel 96 | Intership. |
| 27.980MHz | Channel 98 | Surf Lifesavers. |

| | |
|-----------|--|
| 0.009 | LIPD 200µW max EIRP |
| 0.014 | LIPD 50µW max EIRP |
| 0.02005 | LIPD 7.5µW EIRP |
| 0.070 | LIPD 3µW max EIRP |
| 0.160 | LIPD class licence |
| 0.325 | LIPD class licence |
| 3.025 | LIPD class licence |
| 3.155 | LIPD 60 µW max EIRP |
| 3.175 | LIPD 60 µW max EIRP |
| 3.225 | LIPD 60 µW max EIRP |
| 3.325 | LIPD 60 µW max EIRP |
| 3.500 | LIPD class licence |
| 3.700 | LIPD class licence |
| 4.438 | LIPD class licence |
| 13.553 | LIPD RF ID 1W EIRP |
| 24.000 | LIPD class licence |
| 26.957 | LIPD class licence |
| 27.095 | low powered toys etc |
| 27.145 | low powered toys etc |
| 29.700 | LIPD class licence |
| 29.720 | LIPD radio tx for control of toys 1W EIRP |
| 30.000 | LIPD class licence |
| 36.000 | LIPD radio tx for control of toys 1W EIRP |
| 36.600 | LIPD-100mW EIRP |
| 39.000 | LIPD class licence |
| 40.660 | LIPD class licence |
| 40.680 | low powered toys etc |
| 40.700 | LIPD class licence |
| 41.000 | LIPD max 1.3mW EIRP |
| 41.550 | LIPD max 1.3mW EIRP |
| 41.650 | LIPD max 1.3mW EIRP |
| 41.750 | LIPD max 1.3mW EIRP |
| 41.850 | LIPD max 1.3mW EIRP |
| 41.950 | LIPD max 1.3mW EIRP |
| 43.000 | LIPD max 1.3mW EIRP |
| 43.050 | LIPD max 1.3mW EIRP |
| 43.150 | LIPD max 1.3mW EIRP |
| 43.250 | LIPD max 1.3mW EIRP |
| 43.350 | LIPD max 1.3mW EIRP |
| 54.000 | LIPD class licence |
| 70.000 | LIPD 100 mW EIRP |
| 77.29375 | LIPD 100 mW EIRP |
| 88.000 | LIPD wireless audio, FM only, max bandwidth 180 kHz, max EIRP 10µW |
| 150.7875 | LIPD 100 mW EIRP |
| 173.29375 | LIPD 100 mW EIRP |
| 174.000 | LIPD biomedical or wireless audio, FM only, max bandwidth 180 kHz, max EIRP 10µW |
| 208.000 | LIPD wireless audio, FM only, max bandwidth 180 kHz, max EIRP 10µW |
| 225.000 | low power devices - garage door openers - 10µW EIRP |
| 244.000 | low power devices - garage door openers - 10µW EIRP |
| 273.000 | low power devices - garage door openers - 10µW EIRP |
| 303.950 | LIPD alarms 100µW EIRP |
| 304.000 | low power devices - ±2MHz, 0.1µW EIRP |
| 304.050 | LIPD 10µW EIRP |
| 306.400 | low power devices - garage door openers - 10µW EIRP |
| 318.000 | low power devices - ±2MHz, 0.1µW EIRP |
| 319.000 | low power devices - garage door openers - 10µW EIRP |
| 335.400 | low power devices - garage door openers - 10µW EIRP |
| 471.225 | low power devices - personal safety ±3kHz, 2.5 µW EIRP |
| 471.800 | low power devices - personal safety ±3kHz, 2.5 µW EIRP |
| 472.0125 | LIPD telecommand or telemetry 100mW max EIRP |
| 520.000 | LIPD wireless audio, FM only, max bandwidth 180 kHz, max EIRP 10µW |
| 915.000 | LIPD 3mW EIRP |
| 918.000 | LIPD - RF ID 1W EIRP |
| 2400.000 | LIPD telecommand or telemetry 1W max EIRP |
| 5725.000 | LIPD telecommand or telemetry 1W max EIRP |
| 10500.000 | LIPD 100mW EIRP |
| 24000.000 | LIPD 100mW EIRP |



broadcast monitor

All times, days, and dates are in UTC. Add 11 hours for Eastern Summer Time, 10 hours for Eastern Standard Time, 10.5 hours for Central Summer Time, 9.5 hours for Central Standard Time, eight hours for Western Time, 12 hours for NZ Standard Time, 13 hours for NZ Summer Time. All frequencies are in kiloHertz (kHz); *xxxx- denotes observed sign-on time; -xxxx* denotes observed sign-off time; Eu = Europe, Am = America, SEA = South East Asia, ME = Middle East, Af = Africa

A note from your columnist...

It has been several years since I last compiled a monthly feature such as this; some of you may remember my SWL segment in the (then) new *Amateur Radio Action* magazine, which was ultimately absorbed into the *Radio and Whatsitsname* publication.

My aim in bringing you this column is to provide relevant and up-to-date news primarily dealing with shortwave broadcasting activity.

This is not an easy task, needing a balance of material for a very diverse readership, whose interests range from tuning in to international broadcasters beaming to Australia for news, information or entertainment, to what I would call 'DX-surfers', tuning the bands for new stations, new frequencies, or looking at spectrum occupancies.

Superimposed on all of this is QSL reception reporting activity, which is not only a very important link between listeners and broadcasters, but also a base for hobby participation in a structured, targeted, and orderly manner. I will give QSL news to support this aspect of our hobby.

Every six months, I plan to assemble the 'English Broadcasts to Australia' listings, which were a regular feature in my ARA days.

Medium-wave and VHF-FM DXing are now very specialised topics, but I will include topical items from time to time, as applicable to the Australian environment, as well as any major developments for long-wave.

In preparing this column, I would like to move away from the bland cut-and-paste approach favoured by some writers, which has become so easy in the Internet era. Much of that sort of material is irrelevant, of questionable accuracy, and often quite out of date.

I would instead like to move more towards a reader-participation column, bringing with it a local flavour and character, and I'm setting up a **BROADCAST MONITOR NETWORK** of enthusiastic hobbyists across Australia who would pass on items of interest for inclusion.

If you would like to be part of this, and see your name in print(!), please drop me a note, either by E-mail or post. Indeed, your views and suggestions are invited as to what you would like to see in this column!

The column draws on a vast array of resources at my disposal, including submissions from the worldwide network of reporters to my non-commercial, free, Electronic DX Press E-mailed newsletter.

About Robert J Padula, OAM...

Bob was born in 1939 in Melbourne; his father was an Italian immigrant who had established the Grumento Paving Company which he managed until his passing in 1981 — an amazing unbroken period of some 40 years. Bob's late mother was Australian, whose father had emigrated from England by sailing ship at the turn of the century.

His interest in radio goes back to his schooldays, when he was given a crystal set as a birthday present in 1950.

He used to avidly read each issue of *Radio and Hobbies* magazine, and built many of the sets described, beginning with single valve devices, right up to a multi-wave, bandspread, communications receiver.

His first QSLs were for his 1954 reception of *Radio Japan* and *Radio Sweden*, and since then the count has accumulated to nearly 8000 shortwave QSLs... that's probably some sort of record! Bob tell us the response rate from radio stations over all those years has been about 80 per cent.

The first shortwave radio which he bought was a five-valve dual wave set, in 1954, which he bought from Maxwell's in Melbourne for the enormous sum of six pounds ten shillings, taking several weeks' wages from his after-school work as a chemist's delivery boy.

That radio tuned from 42-13 metres, Bob recalls, rather than succeeding models which covered 49-16 metres. Interestingly, his old chemist boss, Wellington Lee, is still in business, running a pharmacy in Exhibition St, opposite Telstra's HQ!

Bob graduated to an AR8 air force military disposals receiver in 1960. He then bought a Marconi CR100 in 1965, which he extensively modified, which was ultimately retired in 1995. Currently, he uses a National DR49 (bought new in 1976 and still as strong as ever!), and a Yaesu FRG800.

For his world travels, Bob takes along a Sangean ATS-808A portable, which has served him well in the Borneo jungles and rivers, across Vietnam and Europe, and for various DXpeditions to such exotic places back home as the Grampians, and Wilson's Promontory!

He started full-time work with the then PMG's Department back in 1956 as a Technician-in-Training, where he survived for 41 years until leaving Telstra in 1998, the final 33 years in a professional capacity. He is a Chartered Professional Engineer (CPEng, MIEust). He is currently performing professional engineering consultancy, in the broadcast engineering field, which includes technical writing and radio propagation research.

Bob was honoured by the Australian Government with the Medal of the Order of Australia in 1981 'for services to Shortwave Radio', an award which he assures us was totally unexpected.

In 1965, Bob was one of a handful of hobbyists who set up the **Australian Radio DX Club**, and in 1972 he was awarded Life Membership privileges, the first such award to be made by the Club, a distinction which he values greatly. Since the inception of the Club, Bob had been actively involved with its administration continuously, in many portfolios, ultimately holding the elected office of President until December 1995. He has not stood for re-election since then due to pressure of family and work commitments.

Bob was part of the initial editorial team of *Amateur Radio Action*, looking after the first SWL column, and some four years ago he created the *Electronic DX Press*, a free E-mailed newsletter with a global distribution. In between attending to radio-related activities, Bob enjoys travelling the world, especially to 'strange' places. He is involved in bushwalking, bike riding, and swimming, and has substantially completed a major restoration of his 1927 period home.

Bob's overall personal objective with his radio hobby work is to help others, and provide leadership and direction. He has always believed that world radio monitoring is an activity which can be pursued indefinitely, irrespective of the particular technology on which it is based.

In accepting this new challenge, Bob said the following: "It is with that hope that I have accepted this present writing responsibility with *Radiomag*, and I trust that the experience, skills and knowledge I can bring to bear on this work will materially assist readers in their pursuit of radio broadcasting monitoring, at whatever level of interest they choose."

Visit my web site, <http://www.members.tripod.com/~bpadula/edxpx.html> for further information. There you will find links to many articles and my photo-albums, as well as all sorts of other radio-related goodies. There's even a link to *Radiomag*!

You are also invited to visit my personal home page at <http://bpadula.tripod.com/Bobby/>. This is really a light-hearted page, titled *Bobby's Aussie Barn* — smile and enjoy!

The EDXC conference in Barcelona

In October 2000 I undertook a three-week trip to Europe, mainly to attend the annual conference of the **European DX Council (EDXC)** in Barcelona, Spain. As a consulting professional broadcast engineer and writer, I am an associate member with the EDXC, which comprises many European-based DX Clubs, broadcasters, and private individuals.

The conference was at the *Rancho Park Hotel*, a nice establishment in *Castelldefels*, on the coast, about 20km from downtown Barcelona; the *Castell* (Castle), on a mountain nearby, dominates the area.

The three-day meeting, arranged in cooperation with the *Barcelona DX Association (BDXA)* attracted over 50 participants, and was ably led by EDXC Secretary-General *Risto Vahakainu* (Finland), assisted by *Francisco Rubio* (BDXA), and included a day tour to the IBB's Spain Transmitting Station at *Playa-de-Pals*, and a morning excursion to Barcelona and environs. There was a visit to the *Observatory Tower* just outside of Barcelona, followed by an evening banquet at the '*Cabassa Castano*' restaurant in nearby *Sant Cugat*.

The conference featured several expert presentations on current and emerging trends for SW broadcasting, with discussions on such important topics as:

- The Future of International Broadcasting (by *Francisco Rubio*, BDXA)
- Listening for Content — an evaluation code for SW broadcasts (by *Enrique Fernandez*, formerly of *Radio Moscow*)
- Broadcasters' Forum, a panel discussion by the representatives of *Deutsche Welle*, *International Broadcasting Bureau* (Voice of America, *Radio Liberty*, *Radio Free Europe*, *Radio Free Asia*), *Radio Vlaanderen International*, *Vatican Radio*, *Radio Austria International*, *Radio Prague*, and *Radio Korea International*
- Introduction to *Radio Free Asia* (by *Andrew Janischek*, Technical Director of *RFA*, Washington)
- The influence of the Internet on DX Clubs (by *Anker Petersen*, Chairman, *Danish Shortwave clubs International*). [At *Anker's* invitation, I gave a summary of the present circumstances and trends for the Internet delivery of radio monitoring news, based on my experiences with the *Electronic DX Press*.]

The Conference discussed a range of issues concerning SW broadcasting, from the perspective of the organisations who are committed to funding and delivery, especially in the present era of fierce competition from satellite and Internet platforms. Here is a summary of these discussions:

—**Belgium:** *Radio Vlaanderen International* will not be investing any further funds into shortwave broadcasting for replacement of the present facilities.

—**USA:** *IBB* reported that Russian people don't have satellite receivers or personal computers, and shortwave radio is regarded as the prime means of communication.

The *Finland* office of the *IBB* has 25 contract monitors in strategic locations, with about 25,000 technical observations being sent in each week. Individual reports from DXers are not considered suitable, and extensive use is being made of remote monitoring systems, where audio samples and scans can be made at any time.

—**International SW broadcasting** is regarded by many as having no clear goals, or specific business objectives, and little understanding of listener needs. Links with listeners (customers) must be strengthened. Smaller broadcasters are being urged to improve their image and presence, knowing that SW radio is cheap and mobile, and is available anywhere, unlike the Internet.

—**HF Digital Radio.** In March 1998, a group of broadcasters, transmitter and receiver manufacturers, network operators, and research bodies signed a 'Memorandum of Understanding' to develop a system with characteristics as described above.

Later that year a formal consortium agreement was completed, putting in place a body committed to the development of a digital standard for the AM bands below 30 MHz. **Digital Radio Mondiale (DRM)** was established.

The agreed time-scale for introduction of DRM is: • December 2000, froze all development of the technology • January 2001: started the standardisation process • December 2001: complete the standardisation process • 2002: first transmissions to the initial prototype receivers • 2003: official start in conjunction with the *ITU's* World Radiocommunication Conference (WRC)

Current information on DGM is available from <http://www.drm.org>.

The EDXC Conference provided a refreshing opportunity to meet not only with many people who are involved in the management of international broadcasting, but also with many 'customers' (ie, listeners), and representatives of the major European DX Clubs.

The 2001 EDXC Conference is set down for *Budapest, Hungary*, in August, and the Council's Web site is: <http://www.swl.net/edxc/>

World Radiocommunication Conferences

The agenda for the **World Radiocommunication Conference for 2003 (WRC-2003)** includes several items of immediate interest to HF broadcasters — examination of frequency allocations for HF broadcasting in the 4-10 MHz range, and realignment of allocations to amateur and broadcasting services around 7 MHz on a world-wide basis. The preliminary agenda for WRC-2005/6 includes an item to consider recommendations of WRC-2003 for frequency allocations to HF broadcasting and other services in the band 4-10 MHz.

Recommendation 503 from the WRC-2000 held at *Istanbul, Turkey* in June 2000, has been revised, and asks receiver manufacturers to incorporate advanced digital technology in their radio receivers for mass production at a low cost.

WRC-2000 was organised by the *International Telecommunications Union (ITU)*, and was attended by more than 200 delegates from 142 countries. (Asia Pacific Broadcasting Union).

New and expanded SW broadcasting bands

In recent years, spectrum allocations for HF broadcasting have gradually expanded, due to increased lobbying within the *ITU*, facilitated by the migration of many non-broadcasting services to satellite.

The last major band revision was at the *World Administration Radio Conference 1992 (WARC-92)*, authorising operations in the new bands officially from the year 2007, but transmissions in the expanded bands prior to that time are permitted on a non-interference basis, which are already occurring!

The 2007 allocations are as follows:

| | |
|---------------|------------|
| 2300-2495 | 120 metres |
| 3200-3400 | 90 metres |
| 3900-3950 | 75 metres |
| 4750-5060 | 60 metres |
| 5730-6200 | 49 metres |
| 7100-7600 | 41 metres |
| 9250-9900 | 31 metres |
| 11,500-12,160 | 25 metres |
| 13,570-13,870 | 22 metres |
| 15,030-15,800 | 19 metres |
| 17,480-17,900 | 16 metres |
| 18,900-19,020 | 15 metres |
| 21,450-21,850 | 13 metres |
| 25,670-26,100 | 11 metres |

For the current (B-00) season up to March 24, only two frequencies are currently being used on 11 metres:

Deutsche Welle, Germany, from *Wertachtal*, 0800-1400

Radio France International, France, from *Issoudin*, 0900-1300

The new 15 metre broadcasting band is slowly coming alive, and overleaf are assignments for the B-00 period:



broadcast monitor

18,910 USA, WSHB Herald Broadcasting Syndicate, Cyprus Creek, SC, 1600-2000

18,910 NORWAY, Radio Norway International/Radio Denmark, Kvitsoy, 1200-1400

18,950 NORWAY, Radio Norway International / Radio Denmark, Sveio, 0800-1000, 1200-1500, 1600-1900

18,960 SWEDEN, Radio Sweden, Horby, 1130-1600

18,980 USA, WYFR Family Radio, Okeechobee, FL, 1545-1945

WORLD REPORT

Africa

South Africa: Adventist World Radio has introduced new services to Africa, via the leased facility at Meyerton, South Africa: 0500-0530 on 11,970 Yoruba; 1900-1930 on 17,695 Fulfulde

African Beacon: this is a new US based station using leased facilities, and transmissions from Meyerton are:

1530-1800 on 6145 English (1530-1800 Mo-Fr, 1600-1800 Sa/Su)

1800-2200 on 3230 English

1800-1900 on 17,665 English

1900-2200 on 11,640 English

The SARL (South African Amateur Radio League) has weekly broadcasts in English and Afrikaans over Meyerton:

0800-0900 on 9750 and 21,560 Sundays

1800-1900 on 3215 Mondays

Radio Sonder Grense, the internal service of the South African Broadcasting Corporation, has this winter schedule, via Meyerton, with all broadcasts in Afrikaans:

0430-0700 on 7185

0700-1630 on 9650

1630-0430 on 3320

In case you're curious, *Radio Sonder Grense* means 'Radio Without Boundaries'.

Asia/Pacific

Australia. The recent reversal of earlier policy has seen the Government announcing an injection of an additional \$9 million over the next three years.

In 1997, a massive funding cut was introduced, which meant that broadcasts from the Darwin station were terminated, and outsourcing services to other broadcasters was stepped up, such as the leasing of SW facilities in Taipei.

Radio Australia has continued, with a much smaller coverage area, and has put its limited resources into its Internet broadcasts. (*Association for International Broadcasting*).

Radio Australia maintains rebroadcast arrangements with 83 local stations in the Asia-Pacific region. Local radio audiences include Fiji, Vanuatu, Papua New Guinea, Solomon Islands, Samoa, Tonga, Indonesia, Malaysia, Vietnam, Cambodia, China and India.

RA now offers new forms of content and delivery methods. A leading Singapore broadband network carries an Australian multimedia series on economics. Through the National Library Board of Singapore, a CD-ROM of an ABC-Monash University series is now available to 22 libraries via a public access network system. RA education programs are being broadcast or used in schools and libraries by 52 partner organisations, from India to Tonga. (Asia Pacific Broadcasting Union)

• In a surprising move, Radio Australia introduced *another overseas relay* on January 3, this time from the Kranji facility, Singapore, provided by the Merlin network. The planned schedule to March 24 is:

9730 at 2330-0000 to South East Asia, in Khmer

15,435 at 1400-1530 to China, in Mandarin

17,865 at 0500-0530 to South East Asia, in Khmer

• **Trans World Radio Australia**, which has its HQ in Melbourne, passes along this news:

—10,000 Radio Churches in China are planned for completion by July 1, 2001. TWR-Australia's part is to 'plant' 650 churches or provide 750 packages to establish these churches. Each church package contains a high quality SW radio with program schedules, a radio church handbook, two Chinese study Bibles, six 'Discipleship on the Air' books, general teaching notes and handouts. Each radio church costs \$125.

—Funding is sought to maintain the Pidgin Bible teaching programs to Papua New Guinea, currently five programs weekly each of 30 minutes, over KTRW Guam. Unless significant financial support is received, these programs could be terminated in March 2001.

—TWR-Australia programs are now broadcast on ten local stations in Indonesia, as well the KTRW services

—The Church in China is estimated to be growing at around 11 million new believers annually! TWR-Australia broadcasts 20.5 hours of programming daily into China.

South Korea. Radio Korea International has advised details for its overseas relays, for the winter season. The new schedule has been subject to delay, due to refurbishing work being carried out at its Korean based facility at Kimjae:

3955 from Skelton, UK, 2000-2100 German, 2100-2200 French; 3975 from Skelton, UK, 2200-2300 English; 7105 from Rampisham, UK, 1900-2000 Russian; 9535 from Skelton, UK, 0700-0800 Korean; 9640 from Kranji, Singapore, 2200-2300 Indonesian; 9650 from Sackville, Canada, 1100-1130 Korean, 1130-1200 English; and 11,715 from Sackville, Canada, 1000-1100 Spanish.

There are no longer any broadcasts specifically intended for Australia; listeners here are invited to tune in to the non-directional English transmissions from 0800-0900 on 9570, 1300-1400 on 13,670, 1600-1700 on 5975, and 1900-2000 on 5975.

North Korea. Radio Pyongyang introduced its winter schedule during December, and English transmissions are: 0000-0100 to WEu/NAM on 4405, 11,460, 11,710, 13,760, 15,180; 0100-0200 to SEA/LAM on 3560, 11,735, 15,230, 17,735; 0200-0300 to EAf/LAM on 11,845, 13,650; 1200-1300 to ME/Af on 9640, 9975; 1200-1300 to SEA/LAM on 3560, 9850, 11,335, 13,650; 1500-1600 to WEu/NAM on 405, 9335, 11,710, 13,760; 1600-1700 to ME/Af on 3560, 6520, 9600, 9975; and 1900-2000 to WEu/NAM on 4405, 6575, 9335, 11,710, 13,760.

Singapore. The Radio Corporation of Singapore on 6150 has been giving good reception recently in Bangladesh, and is noted in English from 2300 onwards. RCS carries local AM/FM station rebroadcasts on this frequency from 2300-1600. **Radio Singapore International** also broadcasts on this channel in English, parallel with 9600 from 1100-1400. (Rifat Eusufzai, Bangladesh)

Taiwan. Radio Taipei International has introduced some mid-season changes for its winter schedule, affecting its overseas relays in the United Kingdom and USA. Relays from Skelton, UK, for Western Europe are now: 3955 in English 1800-1900, French 1900-2000; 3975 in Mandarin 2300-0000; 5995 in German 1900-2000; 7140 in Spanish 2200-2300

Europe/Middle East

Germany. On December 2, 2000, the non-commercial local station **Hamburger Lokalradio** started a weekly shortwave broadcast, which goes to air every Saturday 1000-1100 on 6045 via the Deutsche Telekom transmitters at Jülich. Hamburger Lokalradio otherwise broadcasts from Hamburg every week between Sunday 6am and Monday 6am local time on a tiny 40 watt FM outlet on 93.0 MHz. (Kai Ludwig, Germany)

Greece. The Voice of Greece has a daily English news bulletin, primarily to Australia, 0750-0755, using the new frequency of 11900, via the Delano, California relay.

This was previously heard on 15,170 and 9775, and is within the 'Foreign Language Broadcast' block which is currently only available on this channel, with parallel targets Japan and the Pacific Ocean region. The use of 11,900 is a 'split' from other services on 7475, 9420, 15,630 and 17,520.

Israel. Israel Radio International, Jerusalem, has moved from the 25 metre band to the unusual channel of 6280 for some services. English is heard 2000-2015 in parallel with 9435. (Chris Hambly, Box Hill, Victoria)

Italy. RAI-International, at Rome, broadcasts a special service in Italian on Sundays, carrying relays of Italian soccer, from 1352-1730. Frequencies are: 17,780 to North America, 21,535 to South America, 9670 to Europe, 21,710 to Central Africa, and 21,520 to East Africa. The daily broadcast to Australia in Italian is 1000-1100 on 11,920 via the Kranji relay at Singapore. (Mick Ogrizek, Ballan, Victoria)

Malta. Voice of the Mediterranean — here is the B-00 schedule: 0500-0600 in Japanese on 17,570* Sundays; 0600-0630 in Italian on 6010 Mondays-Saturdays; 0630-0700 in Arabic on 6010 Mondays-Saturdays; 0700-0730 in English on 7150 Mondays-Saturdays; 0800-0900 in Italian on 11,770 Sundays; 0900-1000 in English on 11,770 Sundays; 1000-1100 in Maltese on 11,770 Sundays; 1100-1200 in French on 11,770 Sundays; 1200-1300 in German on 11,770 Sundays; 2000-2100 in Arabic on 7440# Fridays; 2000-2100 in English on 7440# Saturdays-Thursdays; 2100-2130 in French on 7440# Sundays; 2100-2200 in Arabic on 7440# Mondays-Saturdays; 2130-2200 in German on 7440# Sundays. * via Khobarovsk; # via Moscow. All other transmissions via the Rome site. (Marcelo Cornachioni, Argentina)

Russia. The Voice of Russia recently introduced a new leased relay provided by the Vatican Radio. This is a 30-minute daily evening transmission to Africa in French, from 2100-2130 on 11900.

United Kingdom. The BBC World Service has been allocated an additional £64 million (pounds) by the British Government. This will be used for expanding the BBC's on-line presence, such that this network may be heard on FM across capital cities globally.

The money will also be used for modernisation of shortwave facilities in Cyprus and Singapore. Spread over three years, there will be two up-front payments of £14 million and £15 million.

Audience figures cited by the BBC WS for January 2000 indicated 151 million listeners a week, the highest audience ever.

The plan is to increase the number of capital cities where BBC WS is broadcast on VHF from 112 to 135 by 2003/04. This will make all the BBC's audio output available on line in major languages. Increasing VHF rebroadcasts should assist the BBC in retaining audiences and attracting new and younger listeners.

The financial settlement is not only about expanding the VHF on-line services, but to ensure that traditional shortwave listening is secured and improved for the future. In some countries, 80% of all listening is on shortwave and even in five years time, it will still be a very significant figure. (Association for International Broadcasting)

- The BBC 'On-Line' monthly program guide does not publish specific details of WS SW transmissions to Australia, New Zealand, or the Pacific Islands. Reasons advanced include limited access to SW transmissions from our area, and the specially tailored schedule for some regions.

The BBC now sends out a six-monthly postal-mailed supplement to 'On-Line' readers in Australia, showing the program matrix for SW, VHF, rebroadcasters, and the Internet.

For the B-00 period, BBC WS transmissions to the general area designated 'Oceania' are: 0500-1030 via Kranji on 15,360; 0500-0900 via Kranji on 11,955; 0600-0805 from Skelton on 9580; 0900-1100 via Kranji on 11,955; 1100-1600 via Kranji on 9740; 1800-2200 via Kranji on 9740; 2000-2200 via Kranji on 5975; 2200-2300 via Brandon on 12,080; 2200-0000 via Kranji on 11,955.

('Kranji': Singapore relay; 'Brandon': Queensland relay)

The Americas

United Nations. The UN Radio has recently recommenced regular shortwave broadcasts, and transmissions from the Meyerton facility, in South Africa, are as follows, Mondays to Fridays only: 1700-1715 on 6125 in French; 1700-1720 on 21,490 in French and Portuguese; 1725-1745 on 6125 in Portuguese and English.

Uruguay. Here is an update of current activity: 6125: SODRE, Montevideo, 1326-1333 with local songs; 6140: Radio Montecarlo, Montevideo, 1302-1310 with a special program, titled *Aqui esta su disco*; 9620: SODRE, Montevideo, 1245-1300; 9650: Emisora Ciudad de Montevideo, from Montevideo, 1340-1400 with sports program and listener calls. (Arnaldo Slaen, Montevideo, Argentina)

USA. The following is sourced to Hans Johnson, USA, in the Cumbre-DX newsletter: "Listeners may recall the story of a 250kW transmitter that was once used by KGEI of San Francisco, a station that has been off the air for several years.

"This transmitter was sold to Calvary Chapel of Twin Falls, Idaho. It was disassembled and transported to Twin Falls where it was stored in a potato hut, a half-buried barn used for storing potatoes. Calvary had planned to use it at one time, but decided to focus on setting up FM translators across the United States. Calvary quietly put the unit up for sale, but it sat in the barn for several years until finally being sold.

"Aurora Communications purchased the transmitter in October of 1999. In June 2000, it was loaded up on two tractor trailer rigs and transported to Ninilchik, Alaska. This is on the Kenai Peninsula, not too far from shortwave station KNLS. (It was too difficult to move it to Alaska in the winter.)

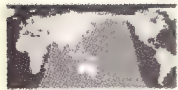
"Aurora plans to start a new Christian station in 2002, broadcasting to Russia. The station has a construction permit pending with the FCC and has begun some work already. In August of 2001, they plan to dedicate their building. The transmitter needs quite a bit of work due to its long time in storage. So the transmitter is being completely broken down and repaired. Some of the old KGEI engineers have come out of retirement to do this.

"They are well aware that they will be broadcasting from the auroral zone, hence the name. Aurora believe that they can cover all of Russia from this site and they also believe that there are some benefits from broadcasting from the zone. Aurora plans to broadcast only in Russian. Programming will be a two-three hour block broadcast repeatedly in prime time to the different time zones in Russia. For example, a broadcast at 6-8 pm for time zone 'A' would then repeated a few hours later at 6-8 pm in time zone 'B.' Aurora estimate they could be on about 20 hours a day. The transmitter will run at 250 kW and the station plans to have three antennas: a corner reflector, a log periodic, and a TCI 611 curtain."

- WGTG (Tennessee) announced that it has suspended work on its third transmitter and additional antennas. This is apparently connected to another station announcement that Genesis Communications Network has ended its airtime purchase on 9400/9320/5085. The Overcomer Ministry appears to have replaced some of this time as heard at both 0000 and 0400. Finally, the station announced a new QSL policy — listeners will now have to send a report to the program heard. The programmer will in turn forward to WGTG for verification. (Hans Johnson, in Cumbre-DX)

Tropical band DX report

We have several cool items from our overseas reporters, concerning their recent DX-surfing in the tropical bands. These stations are potentially audible in Australia, when a darkness or semi-darkness path exists between transmitter and receiver. Across the eastern States, Africa is best in the pre-sunrise period, Latin America in the evenings after sunset, and Asia throughout the night.



broadcast monitor

Over in the West, Latin Americans are sometimes audible around dawn.

2340 CHINA. Fujian Peoples' Broadcasting Station, 1530-1545, parallel with 4975. (Thanks to all news suppliers, listed after each item. This one Alan Davies, Hue, Vietnam)

3289.7 GUYANA. Voice of Guyana, Sparendam, 0440-0505, relay of BBC World Service in English with ID and news at 0500. (Anker Petersen, Copenhagen, Denmark)

3316 SIERRA LEONE. Sierra Leone Broadcasting Service, 2139-2210, English. (Rich d'Angelo, Pennsylvania, USA)

4635 TAJIKISTAN. Tajik Radio, Dushanbe, 1839-1900, folk songs and news, Tajik. (Zacharias Liangis, Thessaloniki, Greece)

4655 PERU. Radio Ecos del Edén, Celendin, new station, 0000-0030. (Horacio Nigro, Montevideo, Uruguay)

4760 INDIA. All India Radio, Port Blair, 2350-0050, Hindi. (Anker Petersen, Copenhagen, Denmark)

4832 HONDURAS. Radio Litoral, La Ceiba, 1205-1229 fade-out, Spanish, strong het from Venezuelan station on 4830. (Rich D'Angelo, Pennsylvania, USA)

4845.2 INDONESIA. Radio Republik Indonesia, Ambon, reactivated 1100-1130 with low modulation, Indonesian. (Juichi Yamada, Tokyo, Japan)

4925 BRAZIL. Radio Difusora da Cidade de Taubata, new on SW, 0400-0430, Portuguese. (Celio Romais, Porto Alegre, Brazil)

4940 INDIA. All India Radio, Guwahati, 0035-0040, English ID and news parallel with 4760, 4775, 4820, 4920 & 5010; at 0040 Hindi ID: 'Akashvani Guwahati'. (Anker Petersen, Copenhagen, Denmark)

5005 NEPAL. Radio Nepal, Kathmandu, 2310-2315 with music bells and ID, Nepali. (Zacharias Liangis, Thessaloniki, Greece)

5040 UZBEKISTAN. Radio Tashkent, 2330-2340, with Chinese program, new frequency replacing 5060. (Anker Petersen, Copenhagen, Denmark)

5047 TOGO. Radio Lome, 0530-0615, French. (M Nelson, Oregon, USA)

5770 NICARAGUA. Radio Miskut resumed SW operations in August. Schedule is 1200-2400 with VOA news relay 1200-1230, 1700-1730 and 2300-2400, Spanish. (Tetsuya Hirahara, Japan)

5986 MYANMAR. Radio Myanmar, Yangon, 1414-1430 Burmese folk songs and talks. (Zacharias Liangis, Thessaloniki, Greece)

6883.5 BOLIVIA. Radio Impacto Cristiano, La Paz, apparently a new station, 1155-1200, announcing 6880, Spanish. (Carlos Fontenelle, La Paz, Bolivia)

QSL snippets!

Trans World Radio. TWR-Europe advises that reception reports for QSLs should be sent to: QSL Request, Trans World Radio, Postfach 141, A-1235 Vienna, Austria.

Reports to TWR-Europe should contain: -Date and time, both in UTC -Time span of report should be 15 minutes minimum to evaluate fading -Frequency should preferably be exact, or to within 50 kHz -Some unique details to indicate that it was TWR programming -Evaluation of reception, such as SINPO coding -Identification of interference (if any), whether co-channel or ± 5 kHz -Name and address given clearly and legibly! -Request for a QSL (not everyone who writes to TWR wants one!)

Those requirements would also be applicable to QSL reports sent to any shortwave broadcaster.

Radio Free Asia. Radio Free Asia, operated by the US Government, welcomes DX reception reports which are QSLd by card; a schedule and sticker are sent to new listeners.

Reports should be addressed to: Ms Tetiana Iwanciw, Executive Assistant for RFA Technical Operations, 2025 M Street, NW, Washington, DC 200356, USA.

Medium wave news

Australia. Changes have happened, and are planned in the medium-wave band! Here is a summary from Ian Stanley, Beaufort, Victoria: **531** 2PM Port Macquarie, new call (ex 2MC and 2KM) **639** 2HC Coffs Harbour, new call (ex 2CS) **846** 4EL Cairns new call (ex 4CA) **1008** 2TAB Canberra new call (ex 2XX) **1026** 4AA Mackay new call (ex 4MK) **1071** 3EL Maryborough new call (ex 3CV) **1089** 2EL Orange new call (ex 2GZ) **1116** 3AK Melbourne, planned move from 1503 during January 2001 **1116** 3AB Melbourne, ceased October 2000 **1215** 2TAB Nowra, new call (ex 2ST) **1278** 3AW Melbourne, is now *mono* **1341** 3CW Geelong, new call (ex 3BM) **1413** Radio Rhema, Shepparton, 60 watts, anticipates upgrade to 400 Watts, temporary antenna at the Pine Ridge site **1467** 3ML Mildura, new call (ex 3MA), mainly relays 3UZ-927 sport **1620** 3GB Melbourne, ceased April 2000 **1629** 3MM Hoppers Crossing, Melbourne, ceased end 1999 **1629** 3RG Shepparton, 400 watts, opened September 1999 **1629** 3?? (callsign not known), Williamstown, 400 Watts, opened May 2000

Following the move of 3AK from to 1116, the vacant channel of 1503 has been allocated to a new short-term community radio licensee,

'Laugh Radio', based in Melbourne, with an anticipated start-up date of March. (Chris Hambly, Box Hill, Victoria)

Electronic DX Press Programs!

For the latest news about SW broadcasting, tune in to my regular sessions from the **Electronic DX Press** over various international broadcasters. EDXP QSLs are also available for reports of these programs — animated / musical / standard Internet-delivered QSLs, or via postal mail. Return postage appreciated for postal mailed QSLs; use the addresses at the top of this column, or the special On-line Report Form in the EDXP Web Site: <http://members.tripod.com/~bpadula/edxp.html>

EDXP News Reports are scheduled:

- **HCBJ**, Quito, Ecuador, within *DX Partyline*, third Saturday of each month (repeated on the following Sunday) (To Pacific: 0910-0945 on 11,755 and 21,455)
- **World Harvest Radio International** (WHRA / WHRI / KWHR), within *DXing with Cumbre*, first Friday of each month, and repeated on the following Saturday and Sunday (to Pacific, Sundays 1300-1330 and Saturdays 1430-1500 on 11,565)
- **Radio Korea International**, within *Multiwave Feedback*, on Sundays (0800-0900 on 9570 and 13,670)

Special news

Iran. The Voice of the Islamic Republic of Iran recently introduced a new schedule, and here are details of the English transmissions: **1100-1230** on 15,185 to Pakistan, 15,385 to Persian Gulf, 21,470 and 21,730 to South-East Asia and Australia, 15,585 to the Far East; **1530-1630** on 9635 to India, 11,775 and 7115 to South East Asia and India; **2130-2230** on 9780 and 11,740 to South-East Asia and Australia; **0030-0130** on 6065 and 9022 to Central and South America, 6135 to North America. (Thanks to Mick Ogrizek, Ballan, Vic)

Taiwan. Radio Taipei International made extensive schedule changes during January, including the introduction of the unusual out-of-band channel of 6280.

The main features of the new schedule are: **6280**: a new out-of-band frequency, used from 2100-2200 for Spanish to Europe, and also for relaying the Domestic Service in Mandarin from 0900 until 1400;

11,970: a new frequency 0900-1000 for an additional service in Russian, for Asia;

15,060: a new channel for Arabic to the Middle East, 1600-1700;

11,550: in use for retimed services in English 1600-1700, and Indonesian 1000-1100; and

11,725: an additional service in Vietnamese, 0100-0200.

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Year 2000 Remembrance Day Contest – the results VK4 Division Wins!

By Alek Petkovic, VK6APK

Amateur radio operators keenly participate in many contests, in which they pit their operating skills against other stations. The annual RD Contest is particularly important to Australian amateurs, as it not only pits operator against operator, but state against state. Here are the results of last year's contest, as supplied by the WIA.

Through consistent improvement in both the HF and VHF sections, the VK4 Division has broken the stranglehold of the VK7 division and taken out the Remembrance Day Contest premiership for 2000. From 5th place in 1999 to 1st place in 2000 is a tremendous effort. Congratulations to all those who participated and submitted their logs.

Most divisions registered some improvements in their divisional scores over last year. Also encouraging this year is the number of Limited Novice class operators who took part. Hopefully this increase in contest activity will continue.

There was some confusion in the rules regarding the use of computers for logging and sending CW. I agree that the wording was unclear and this will be addressed in the rules for 2001. There was never any intention to exclude the use of computers for these purposes. In fact their use is encouraged, as the logs tend to be a little more accurate and much easier to read.

The other issue is that of cover sheets. It is very important to include the name of the operator on the cover sheet or in the log. Some cover sheets made no provision for this and so it makes it cumbersome to find the details in order to print and send out certificates. Please check the cover sheet you are using and make the appropriate changes.

I would like to apologise for the late production of the results. My current employment has seen me away from home from mid July through to late December 2000. I was home for only five weekends during that time. Luckily, one of those was RD weekend. I was actually able to operate for short periods during the contest.

Unfortunately, however, collation of the contest results had to give way to family and household matters until the holiday season.

Here now are the results of the contest. Please note that, due to the rule change prohibiting automated or robot operation, the VK3 Division's 2000 VHF Benchmark has been adjusted from 11,342 to 9927 in an effort to minimise any disadvantage or penalty to that division.

Divisional Scores

Table 1 shows the placing of each division along with their overall Improvement Factors.

The total scores in both HF and VHF are shown in Table 2.

There is some uncertainty and even mystery as to how each division's score is calculated. To make it all a little clearer, I have included the following live example of how it is done. I will use the VK3 Division's figures in the calculations.

Table 1: Divisional Ladder

| | | |
|-----|-------|-------|
| 1st | VK4 | 2.533 |
| 2nd | VK7 | 1.328 |
| 3rd | VK2 | 1.202 |
| 4th | VK3 | 1.172 |
| 5th | VK5/8 | 1.047 |
| 6th | VK1 | 0.780 |
| 7th | VK6 | 0.729 |

Table 2: Divisional Scores

| Division | HF | VHF |
|----------|------|------|
| VK1 | 840 | 40 |
| VK2 | 5755 | 69 |
| VK3 | 4754 | 8758 |
| VK4 | 5882 | 2574 |
| VK5/8 | 4915 | 1213 |
| VK6 | 2143 | 3425 |
| VK7 | 1796 | 1476 |

Table 3: 2001 Benchmarks

| Division | HF | VHF |
|----------|------|------|
| VK1 | 680 | 152 |
| VK2 | 4693 | 65 |
| VK3 | 3852 | 8727 |
| VK4 | 4050 | 1219 |
| VK5/8 | 4039 | 1467 |
| VK6 | 2670 | 4504 |
| VK7 | 1841 | 1025 |

First is the calculation of Benchmarks for VK3 for 1999 RD Contest:

1999 Benchmarks.

(As published in 1998 Results)

HF 3773; VHF 7988

1999 Scores. (As published in 1999 Results)

HF 2886; VHF 10903

Formula:

2000 Benchmark = (0.25 x 1999 Score) + (0.75 x 1999 Benchmark)

Calculations:

HF: 2000 Benchmark = (0.25 x 2886) + (0.75 x 3773) = 721.5 + 2829.75 = 3551

VHF: 2000 Benchmark = (0.25 x 10903) + (0.75 x 7988) = 2725.75 + 5991 = 8717

Those two benchmark figures are the scores the division needs to beat to register a positive improvement factor in each section of the contest. Now, to calculate the final score, let's use the points that the VK3 division scored in HF and VHF this year.

Formula:

Improvement Factor = 2000 Points divided by 2000 Benchmark

Calculations:

HF 4754 / 3551 = 1.339

VHF 8758 / 8717 = 1.005

The two improvement factors are now averaged to give the division's final result.

Formula: Overall Score = (HF Improvement + VHF Improvement) / 2

Calculation: Overall Score = (1.339 + 1.005) / 2 = 2.344 / 2 = 1.172

In Table 3 we see the Benchmark figures for the year 2001.

Individual Scores

The individual scores for entrants are listed opposite. Certificate winners are denoted by an asterisk (*) and the top Australian scores in each section by a hash (#).

Certificates will be issued to both the top single operator and top multi-operator stations in each division.

I received lots of comments with the logs this year. These comments and suggestions are always very welcome. It would take several columns to reprint them all here so I've selected one which particularly caught my attention and which, I believe, sums up RD 2000.

It's from Roy, VK4BAY, who says, "Good conditions on all bands. Good company, good spirit, good competition. This is my 15th consecutive RD as a single op and I've enjoyed every one." Thanks Roy and thanks everyone.

73 and see you in 2001!

| | | | | | | |
|------------------|------------------|--------------|------------------|------------------|------------------|-------------------------|
| VK1 | OM.....183 | TYR.....319 | AYF.....10 | CKG.....105 | ZKK.....82 | AO.....12 |
| HF Phone | EK.....162 | JK.....298 | AHY.....6 | OF.....91 | AVQ.....57 | HK.....11 |
| EY.....*99 | KMC.....120 | HGF.....211 | DET.....4 | MA.....80 | AIM.....50 | WU.....11 |
| DW.....86 | EX.....117 | ER.....205 | | KF.....79 | RV.....35 | KCC.....9 |
| JDX.....79 | JK.....111 | EA.....200 | VHF Open | 3YID.....78 | FD.....25 | |
| | KTO.....109 | JSM.....200 | APC.....*298 | ZA.....76 | ATQ.....20 | VK7 |
| HF CW | DS.....93 | CMC.....198 | YE.....*133 | BAY.....55 | SE.....20 | HF Phone |
| AU.....*202 | RB.....84 | ACR.....193 | | PJ.....49 | ADD.....11 | MS.....*217 |
| | ER.....83 | KBD.....190 | VK4 | WIZ.....48 | | CK.....210 |
| HF Open | KQB.....81 | XJU.....189 | HF Phone | GUY.....47 | VK6 | JGD.....199 |
| ENG.....*242 | WB.....66 | SB.....176 | DO.....*420 | BB.....42 | HF Phone | RN.....163 |
| VP.....132 | KRB.....61 | FT.....175 | WIL.....*382 | ANN.....39 | CSW.....*306 | KC.....125 |
| | FIM.....59 | OK.....175 | BAY.....303 | ZXZ.....35 | KG.....165 | KRW.....120 |
| VHF Phone | CMC.....55 | DXL.....171 | ADC.....277 | ADY.....28 | DDX.....136 | DG.....79 |
| EY.....*26 | SB.....54 | SAC.....160 | FNQ.....202 | EV.....24 | AR.....109 | NGC.....62 |
| DW.....14 | AAM.....53 | KTO.....155 | WW.....184 | WIT.....24 | AB.....79 | KH.....38 |
| | ADW.....53 | TEN.....150 | SJ.....176 | FNQ.....17 | KH.....71 | EH.....30 |
| VK2 | AMW.....52 | XDJ.....147 | BAF.....132 | BIB.....12 | PX.....70 | PP.....30 |
| HF Phone | MMM.....49 | RB.....137 | IS.....123 | TI.....11 | NHY.....63 | RM.....29 |
| XN.....*#556 | ACR.....47 | JED.....131 | CYL.....104 | ZJ.....11 | GL.....55 | SA.....22 |
| AKJ.....484 | BVW.....46 | US.....118 | AGP.....100 | KKN.....8 | SAR.....*44 | WR.....19 |
| DCL.....*358 | US.....46 | AQ.....116 | WST.....98 | FK.....2 | ABS.....41 | JP.....16 |
| CAA.....294 | AQ.....45 | 2TWO.....112 | IRW.....96 | | TS.....33 | BM.....15 |
| XT.....233 | BYJ.....45 | ZUG.....107 | KKN.....79 | VHF Open | OE.....30 | KBE.....15 |
| IBT.....207 | DI.....44 | JMD.....103 | AWL.....76 | AR.....*314 | RZ.....28 | NDO.....15 |
| BGF.....165 | FT.....44 | WWW.....102 | KF.....68 | | AD.....25 | AC.....10 |
| VG.....148 | DXL.....41 | FGN.....101 | ACW.....64 | VK5/8 | YF.....21 | EB.....10 |
| GWK.....144 | DKT.....38 | NDJ.....97 | PJ.....54 | HF Phone | NGW.....20 | |
| RD.....136 | DY.....36 | KKJ.....90 | KDL.....50 | SR.....*534 | APK.....17 | HF CW |
| BDT.....130 | PC.....36 | MGZ.....85 | EMA.....40 | BQ.....*417 | AO.....14 | JE.....*110 |
| AGF.....113 | CRP.....32 | BYJ.....82 | ZJ.....33 | BWH.....290 | MIN.....12 | LCW.....22 |
| KET.....90 | EA.....31 | GK.....81 | ACC.....31 | GRC.....256 | WU.....11 | |
| SWR.....84 | EST.....31 | DYL.....80 | ILD.....31 | BP.....227 | | HF Open |
| WI.....56 | PDX.....30 | PC.....80 | BSH.....30 | XY.....126 | HF CW | TS.....*178 |
| JON.....51 | MGZ.....29 | YDJ.....68 | LMB.....23 | ASN.....105 | AFW.....*202 | KT.....*62 |
| KUR.....46 | DET.....20 | YNG.....57 | ADY.....18 | EMI.....80 | AJ.....152 | |
| BJK.....40 | KK.....24 | CAM.....56 | EV.....18 | RV.....75 | PG.....100 | VHF Phone |
| EI.....37 | PRA.....22 | NYE.....56 | FK.....17 | FD.....70 | AF.....56 | HDM.....*220 |
| CNI.....35 | BCZ.....20 | LSL.....54 | TI.....16 | AIM.....49 | | DG.....201 |
| EJU.....35 | ADA.....19 | TGX.....54 | WIR.....15 | AKQ.....67 | HF Open | XDB.....136 |
| BVU.....25 | CAM.....19 | APF.....53 | 3CE.....10 | OQ.....67 | VZ.....*264 | JGD.....114 |
| CF.....20 | WI.....19 | DID.....53 | | RK.....62 | HK.....19 | ZCR.....100 |
| MQX.....14 | AJ.....18 | VP.....51 | HF CW | NN.....61 | | EB.....99 |
| KWX.....11 | KB.....17 | ZPF.....50 | WID.....*292 | KMK.....55 | VHF Phone | FB.....91 |
| | WW.....17 | JNH.....49 | XA.....*230 | TW.....35 | ANC.....*237 | KRW.....*90 |
| HF CW | JNB.....16 | KKJ.....47 | BUI.....218 | DG.....30 | JIP.....*235 | TRF.....88 |
| KM.....*288 | CEA.....14 | VNA.....45 | IH.....178 | ZQ.....30 | HU.....215 | TS.....83 |
| BHO.....266 | AYF.....10 | BGS.....44 | XW.....146 | NE.....25 | SAA.....215 | JK.....50 |
| AYD.....262 | GK.....9 | JDO.....41 | LP.....116 | AFZ.....21 | AD.....200 | RM.....45 |
| OI.....208 | ACZ.....6 | CAT.....37 | EMM.....84 | MH.....20 | BDO.....198 | NDO.....44 |
| EL.....202 | VNA.....5 | ADA.....33 | OW.....84 | SE.....18 | HAO.....177 | ZTW.....41 |
| AZR.....120 | JED.....4 | KB.....33 | TT.....34 | ATQ.....6 | SAR.....173 | KK.....38 |
| IL.....86 | JNH.....4 | CRP.....32 | IW.....10 | ACF.....1 | MIN.....160 | WR.....22 |
| PS.....76 | | EST.....32 | | | AR.....148 | PP.....14 |
| RJ.....70 | HF CW | EWM.....30 | HF Open | HF CW | JP.....146 | |
| GT.....52 | BKU.....*228 | VKC.....30 | LT.....*#315 | UM.....*#306 | NKB.....136 | SWL Section |
| | VB.....190 | JTW.....28 | DB.....312 | 8HA.....210 | CSW.....129 | Peter Kenyon |
| HF Open | XX.....116 | TJN.....28 | WIT.....*226 | | NU.....125 |*#405 |
| BO.....*490 | AMD.....80 | APP.....25 | GZ.....117 | HF Open | KG.....120 | James Zinkler |
| WL.....123 | DID.....68 | XH.....25 | LV.....90 | BRC.....*#774 | KFD.....114 |165 |
| | JL.....26 | ZWI.....25 | ZA.....90 | ATU.....*425 | NGW.....91 | Christopher |
| VHF Phone | | JNB.....24 | AKI.....70 | RG.....227 | ZKO.....78 | Elliot.....115 |
| HDH.....32 | HF Open | EX.....23 | | GZ.....115 | AP.....77 | |
| BDT.....19 | JSM.....*228 | KRB.....23 | VHF Phone | WO.....75 | FJA.....77 | Overseas Section |
| YHN.....18 | YE.....135 | ZBN.....23 | 3CE.....*223 | ZL.....56 | TS.....67 | HF Phone |
| | VP.....98 | AMW.....22 | ZBV.....203 | | XV.....61 | ZL3TX.....*74 |
| VK3 | PP.....55 | WI.....22 | HBP.....201 | VHF Phone | YF.....60 | ZL2ADN.....41 |
| HF Phone | | MTA.....19 | WIL.....*186 | BRC.....*335 | TT.....42 | |
| CB.....*322 | VHF Phone | TFE.....19 | EHT.....155 | AR.....*189 | RO.....38 | HF Open |
| APC.....*258 | SAA.....*#890 | CEA.....15 | ADC.....114 | GRC.....139 | YJ.....29 | ZL1ALZ.....*465 |
| SAA.....217 | MZ.....*573 | CB.....12 | AML.....111 | XY.....130 | KH.....20 | ZL1BYZ.....292 |
| AHY.....204 | DI.....360 | KK.....12 | LC.....106 | MX.....120 | PX.....14 | ZL2AJB.....112 |

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Scannists rejoice! This radio has the performance, low-power requirements, low profile and wealth of capabilities to definitely make it a worthwhile, take-anywhere, listen-to-anything receiver, no matter whether you're going to a party, camping at the river, or backpacking across the Himalayas... John Batty checks it out...

The tiny grey Yaesu VR-500 communications receiver sat on my desk for nearly two weeks before I had a serious try at programming it. I believe the first thing you should do with any new piece of kit is to RTFM — read the, er, flaming manual — and I didn't have one; thanks to the editor's warped sense of humour, the rig arrived here sans destructions.

This exciting radio receives *all* modes from 100 kHz to 1299.9995 MHz, without any gaps, although the actual ranges given in the manual are 0.1-29.9995, 50.00-53.9995, 88.00-107.9995, 144-147.9995, 430.00-449.9995, and 1240-1299.9995MHz. That claimed coverage is the two broadcast and shortwave bands plus four VHF/UHF amateur bands. The reason for this claim is that, in some markets, that's all the listener is allowed to listen to.

What lucky people we are in Australia!

We can listen to anything we like, anywhere we like, as long as it's not carried on the public telephone network or used for profit or nefarious activities.

With this kind of range, six modes and 32 different menu-selectable items, all in some way controlled by the 21 different multifunction buttons and knobs on its tiny frame, it is hardly surprising that random button-pushing produced little activity other than a dial light and random hisses. So while Chris Ayres at Dick Smith hunted up a spare manual (thanks Chris) I poked and prodded and wondered if this tiny shirt-pocket-sized receiver, way less than half the size of an average hand-held scanner, could measure up in performance.

Having played with several new items of equipment lately, I am beginning to believe that there is a conspiracy afoot to give radios as many features as possible, controlled by

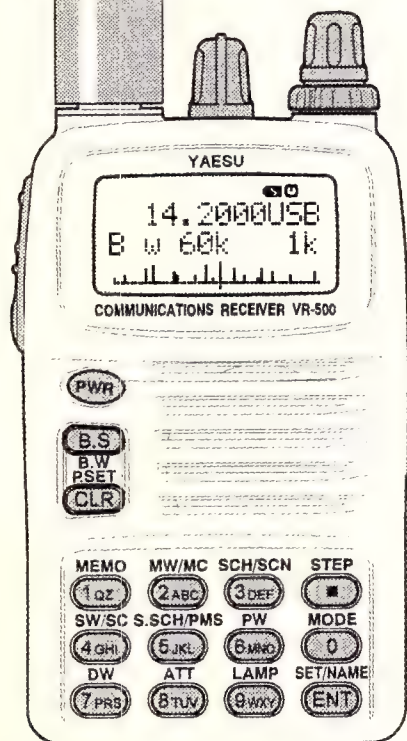
the minimum possible number of buttons, which are assigned ever more incomprehensible abbreviations and key combinations to make the functions selectable. The VR-500 is not immune to this trend; however, it is not the worst offender I have seen. In fact, once the manual was at hand, it only took me an hour or so to have basic functions working as advertised. Setting the unit up for the first few monitoring sessions means setting the broad operating parameters from the menu — try the options — and learning a few keypress combinations.

On powering up, the unit defaults to VFO mode (unlike most scanners) telling you so on-screen along with the last-monitored frequency/mode/step size. This is good; the unit has to park itself somewhere on startup and that's the logical place since it doesn't know "where you want to go today". The unit also makes the arbitrary decision to illuminate the LCD screen and the backlit keypad on power-up and every time you make a control input, leaving the lights on for six seconds each time. While this orange lighting is pretty it consumes power from the two on-board AA cells; there are probably also times when you don't want the unit to light up whenever you tweak a dial. Yaesu have thought of that and it can be changed if you wish by entering the Setup menu and changing items Key Lamp and Lamp Mode.

The FUNCTION key [from here, shortened to F], positioned where the PTT switch would be if this unit transmitted, is all-important for almost any operation, so top marks ergonomically for putting it where it is, right under your thumb. Many other buttons have three functions and are thus labelled with up to three names/functions, sometimes almost cryptically.

To change the lighting parameters, press and hold F while pressing the ENT (SET/NAME) key. This brings up the 32-item system menu. The tuning dial is then turned click by click to step through the menu items to Menu Item 3, "Key Lamp". While holding F pressed, rotate the dial again and the choices ALL or DISPLAY are given. Leaving it parked on DISPLAY loses the backlit keypad for good, so if you want to

YAESU VR-500



EQUIPMENT

REVIEW

keep the illuminations but just be more in control of when they appear, release F and rotate the dial to Menu Item 4, "Lamp Mode". Again, press and hold the F button while rotating the dial. The choices given are **AUTO** and **TOGGLE**. Release the F button on **TOGGLE**, and you have a unit which will only light up when you decide to press and hold the F button, while toggling the lamp on and off with the **LAMP** key.

Having set lighting to our satisfaction, the **CLR (P.SET)** key gets us back to VFO mode, which is where any frequency within the range can be manually entered via the keypad and the unit tuned up or down from that frequency. This is only one of the available tuning modes and is also the easiest to set up (assuming you want some control; if you don't, then an even easier mode is **PRESET**, which breaks the entire coverage into 10 bands complete with band-specific modes, and tunes through them sequentially.).

Having entered your frequency (say 11.175MHz) you need to set mode, in this case **USB**. (The radio automatically defaults to **AM** mode for this frequency; after several other frequencies defaulted to **AM** rather than the **SSB** I was looking for, I went back into the Setup menu (F + **SET/NAME**), and found Menu Item 1, **RECEIVE MODE**, and selected **MANUAL** rather than **AUTO**. A broadcast-station-chaser probably wouldn't want to bother). Now to set your own modes you press and hold F and press the **Ø (MODE)** key. With each key-press of **Ø (MODE)** you will see the mode beside the frequency cycle through **USB**, **CW**, **NFM**, **WFM**, **AM**, **LSB** and back to **USB**. Press **CLR (P.SET)** to get back to VFO.

In VFO mode, you can either tune manually by turning the dial knob, or let the radio do a VFO Search. Menu Item 12 is **SEARCH MODE**, which can be set to **LIMIT** or (in this case) **VFO**. More about **LIMIT** later.

Finally, you need to set your tuning step. Press and hold F while pressing **· (STEP)** [that's decimal place, (STEP)]. Beneath the frequency on the screen, **STEP** will illuminate, with a choice alongside it. Rotating the dial knob will now go through the step size choices.

Step size choice is another big plus for the VR-500. Choices, all in kHz, are 0.05, 0.1, 1, 5, 6.25, 9, 10, 12.5, 15, 20, 25, 30, 50, 100kHz or **AUTO**. Auto selects a step size appropriate to the band segment chosen. Each click of the dial knob will now advance or retard your frequency by that step size. But there's more here — while in **STEP** select mode, one of the digits in the frequency readout will be blinking. Press and hold F while turning the dial knob and you can select which digit. This becomes the digit which alters if you use "Fast Tune" once you are back in VFO mode [via **CLR (P.SET)**], ie press and hold F while turning the dial knob. As you see, this enables you to leap in multiples

from Hertz up to MegaHertz, no matter what the selected 'normal' tune step size. That's great!

Set your volume knob and squelch (there is an audio squelch to set, which is a knob concentric to the tuning dial, but there is also a selectable RF Squelch to set if you wish, Menu Item 19, which allows you to block signals below a certain S-meter reading from opening the squelch). Once all that's done the unit is now ready to manually tune, using the dial knob, or VFO Search, up or down from your designated frequency with your selected step size and mode, which can be changed on the fly (F hold/STEP or F hold/MODE and select at any time).

That's a lot of keypress operations for a simple mode of operations, isn't it. Yes; at first, even after reading the manual, I didn't really warm to the receiver because I dislike having to remember different cryptic commands for every radio function on every radio. However, after the first half-hour or so, it became apparent that what had at first appeared complicated was actually fairly straightforward once you get your head around how the command structure is organised; basic operations were becoming second-nature, and I could generally anticipate the command keypresses required.

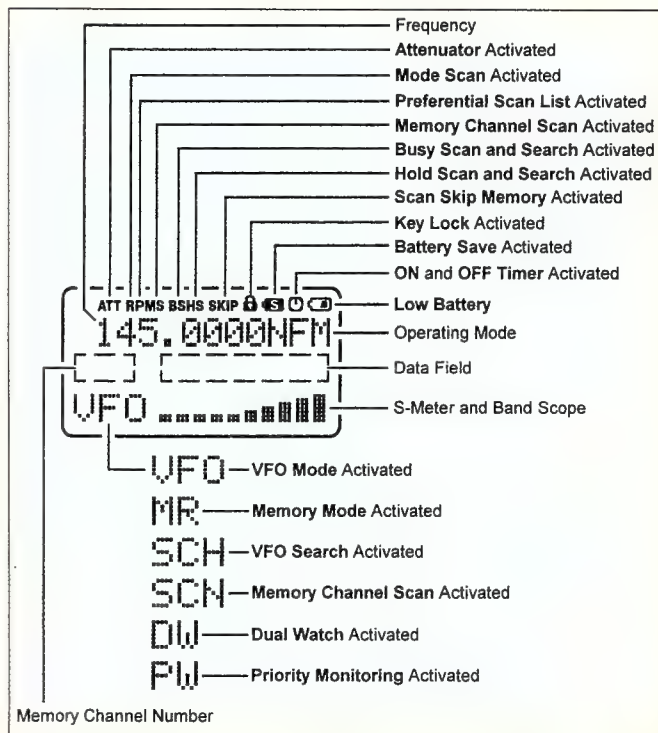
That's not to say I don't still think there are probably too many functions for too few controls; it's just that quite a few of them are easily accessible. If you consider the minuscule size of it, though, I doubt there was any other way. The 44-page manual does a very good job of walking you through the capabilities. I won't go through all the key-press operations to set up all the VR-500's operating modes; you get the point I'm sure, and can probably see that they do actually follow a learnable pattern. The rest is just brain/finger training.

However, once you program the unit to do what it does in the way you want it done, and memorise how to select between different modes of operation, one of these in your shirt pocket gives you everything you really need or want in an ultra-portable communications receiver.

If you only want to do a VFO search in certain chunks of the RF spectrum, by setting the Search Mode to **LIMIT**, 10 Search Band Memories can be designated. These are factory-preset at: 0.052-1.8; 1.8-3.6; 3.6-10.5; 10.5-21; 21-30; 50-54; 88-108; 144-148; 430-450; and 1240-1300MHz.

Most importantly from a monitor's point of view, each Band Memory can be customised with your own low/high frequency limits.

For keeping track of your 1000 most popular frequencies, there are ten 100-channel memory banks for storage. Frequencies can be stored in two ways, 'simple' storage which whacks the frequency into the first



REVIEW

YAESU VR-500

unused slot it finds, or 'designated' storage, which allows you to choose the bank and channel number. This enables you, for example, to keep all your NASA frequencies in one Memory Bank, local SES in another, ham channels in another, and so on.

Memory channels can carry an alphanumeric name, and can be dialled up or recalled by direct keyboard entry. They can be scanned *en masse*, by designated banks or by Preferential Memory Scan, where only pre-designated memory channels are looked at. They can be scanned by Mode, too, so select nFM and only Narrow Band FM Memory Channels will be scanned. They can even be scanned by alphanumeric name, so enter 'Police' and it will scan only the channels named Police! Finally, memory channels and entire memory banks can be swapped and copied between each other, checked for vacant space or cleared entirely.

For those who want to monitor just the uplink and downlink of a repeater, or spacecraft, **Dual Watch** mode saves you dedicating a bank to two frequencies. What's that? You've got ten spacecraft whose uplink and downlink channels you want to watch? That's okay, because there are ten Dual Watch pairs programmable. Similar in concept and familiar to most scanner users is the Priority Channel monitor, which checks a designated 'Priority Memory Channel' frequency every few seconds while in VFO monitor mode on another frequency. So why not? Listen to *DX Roundup* on Radio Nederland while the rig checks your local ham repeater every five seconds!

Smart Search takes a user-programmable lower and upper frequency limit and does a sweep, once up and once down the designated band, and stops. Any active frequencies during the sweep are stored in the Smart Search memory bank. This bank is variable in size via the F hold/ENT (SET/NAME) system menu, to hold 11, 21, 31 or 41 frequencies; the default setting is 31.

If you select a single sweep, these memories are filled half on the upward sweep and half on the downward sweep through

the band, and once the sweep is complete, the unit stops and any filled Smart Sweep memory channels can be scrolled through and monitored via the dial knob. If you select **Continuous Sweep**, the unit will keep sweeping up and down through the selected band until all sweep memory channels are full.

Another way of checking for activity within a given band is by using the **Band Scope** function. Yes, even in something as tiny as this radio! When selected, a simple line-graphic appears in the bottom of the LCD screen; a long horizontal line divided in the centre with a short vertical. This disarmingly simple graphic is the output of yet another very powerful feature. The band scope operates in one of two selectable modes, giving you total control over sweep range and sweep range step size.

Above the band scope on the screen, beneath the centre-frequency readout, appears something like **A w600k** and **20k**. This cryptic shorthand indicates "Mode A, Sweep Range 600kHz, 20k sweep step". Mode A allows you to select either 300kHz or 600kHz sweep range (ie 150kHz or 300kHz above and below the centre frequency) and look at it every 9, 10, 12.5, 20, 25, 50 or 500kHz. Active frequencies are indi-

cated on the horizontal line by an intersecting vertical, whose length indicates signal strength. Up to 60 active channels can be shown this way (10kHz step, 600kHz range). With the given range and step values of 600kHz and 20kHz, up to 30 active channels would be shown.

Mode B fixes the number of channels at 60, but allows even more flexibility in step size, with 50 or 100Hz, 1, 5, 6.25, 9, 10, 12.5, 15, 20, 25, 30, 50 or 100kHz available. This gives a huge range of scope coverage varying from 3kHz (1.5kHz either side of centre frequency) at 50Hz steps, through to a whopping 6MHz — ± 3 MHz at 100kHz step size. Modes can be A/B toggled and settings changed without leaving the band-scope.

No audio is available while in bandscope mode (the RF from the signals is diverted to the display to show them to you). What makes the mode so useful is that once you see an active channel which interests you, turning the dial knob left or right moves a tiny cursor



under the signal graphic. Press B.S. to cancel Band Scope, and the unit jumps to the active frequency indicated, with audio on. Select bandscope again, and that frequency become the new centre frequency.

As you can see from the photos, as tiny as the VR-500 is, almost a third of even *that* space is taken by the two AA batteries, which appear to run it forever; well, close to it anyway, I've got two 700mAh rechargeables in it, and when wide-open receiving the VR-500 draws 115mA. On standby with the saver circuit off, it draws 55mA. With the saver circuit on, you could run it on a thought; it draws 15mA. Hang on... *saver circuit?*

Menu item 5 is "SAVE". Selecting it on gives you a choice of Battery Save Interval ratios, 1:4 (1 sec), 1:12 (3 sec), 1:20 (5 sec), 1:28 (7 sec) and 1:36 (9 sec). The manual says "Note that the VR-500 receiving time is 250ms when the battery save on". Forgive me if I'm wrong, the manual doesn't make it any clearer, but what this seems to mean is that with the saver on, the radio is only actually receiving for a selectable fraction of each second, thereby saving power while 'seeking'. (That's it. The receiver circuits can cycle on and off according to your preferred settings, which can extend battery life very considerably, particularly on quiet channels. Ed.)

Before going to sleep, you can set menu item 6, the "Off Timer", as a 'sleep' command; let the unit scan on the bedside table and it will switch off after your selected 30, 60 or 90 minute period. Before you nod off, decide how long you want to sleep, an set menu item 7, the **ON Timer**, for the required number of hours, and the VR-500 will wake you up too!

There is a cloning feature as well; once you have one VR-500 set up to your liking, all the memories and configuration can be transferred across to a second VR-500, using the very simple optional CT-35 cloning cable. You could make one from the cable wiring diagram given in the manual... it would take all of about three minutes.

If you are a dyed-in-the-wool scanner user, and like to cart your radio about with you wherever you go, you're probably used to the funny/puzzled/hostile looks some people give you. It wasn't so bad a few years back, when mobile phones were about the same size as your average hand-scanner; but nowadays, with mobiles shrinking to a singularity, the average Yupi or AOR clanking on the belt looks more than a bit suss again. Not so with the VR-500; at a glance it could be taken for a small-but-chunky mobile with a rubber ducky antenna. Certainly no-one would believe it's a 0.1-1300MHz all-mode comms receiver!

A whole host of sensitivity figures are given for different blocks of spectrum in different modes; they are as impressive as the figures quoted for most other latest-generation receivers. The real question, though, is "yes, but does it *work*? Can it receive everything it's



advertised to receive?" The lab test I devised was simple. I went downtown for the afternoon. Sitting at a sidewalk table at the coffee shop with an earpiece plugged in, no-one gave the VR-500 with its 7.5-inch rubber ducky a second glance as it sat on the table. And that's a plus in itself; if it's not obvious what it is, it's less likely to be pinched.

In the middle of Kingaroy it happily tuned to the local and regional FM and AM broadcast stations with good quality audio; I didn't linger long on them, though. A few button-pushes and as clear as crystal there was HCJB, Voice of the Andes, sounding almost local. Twist the dial and there's the BBC from London... just about any of the HF AM broadcasters you'd expect to hear on your shack table rig were there according to propagation. 8122kHz USB, the RAN A1 channel, 11,175kHz USB and 13,200kHz USB, the USAF (old) Global primaries, were all audible, with the adjustable step sizes allowing ultra-precise resolution of the clean-sounding SSB.

There's not a lot of local VHF/UHF ham activity up here; I mean, people *talk* to each other, of course, but the repeaters out here are nowhere near as busy as those in, say, Sydney or Melbourne. But whenever they fired up with their CW IDs, the VR-500 rapidly locked on to all those I'd expect it to, and likewise on

the CB repeaters, with a farm couple on the outskirts clearly heard nattering on simplex.

Voice signals, especially through the earphone, are clean and rich; there's 90mW audio output on battery, and 125mW audio on external power. I'm sure that if you went chasing RTTY/digital signals, the audio would be plenty good enough to feed into your decoder. In my own humble opinion, a dedicated CW mode always seems a bit of a why-bother if you have LSB/USB; you can tune the CW on SSB and that's all you need 99 per cent of the time — but that's just me. The CW mode does produce clear, clean CW (allowing for GIGO, of course...); the CW quoted sensitivity is the same as the SSB sensitivity, at either 0.5, 0.6 or 0.8µV depending on the band you're on.

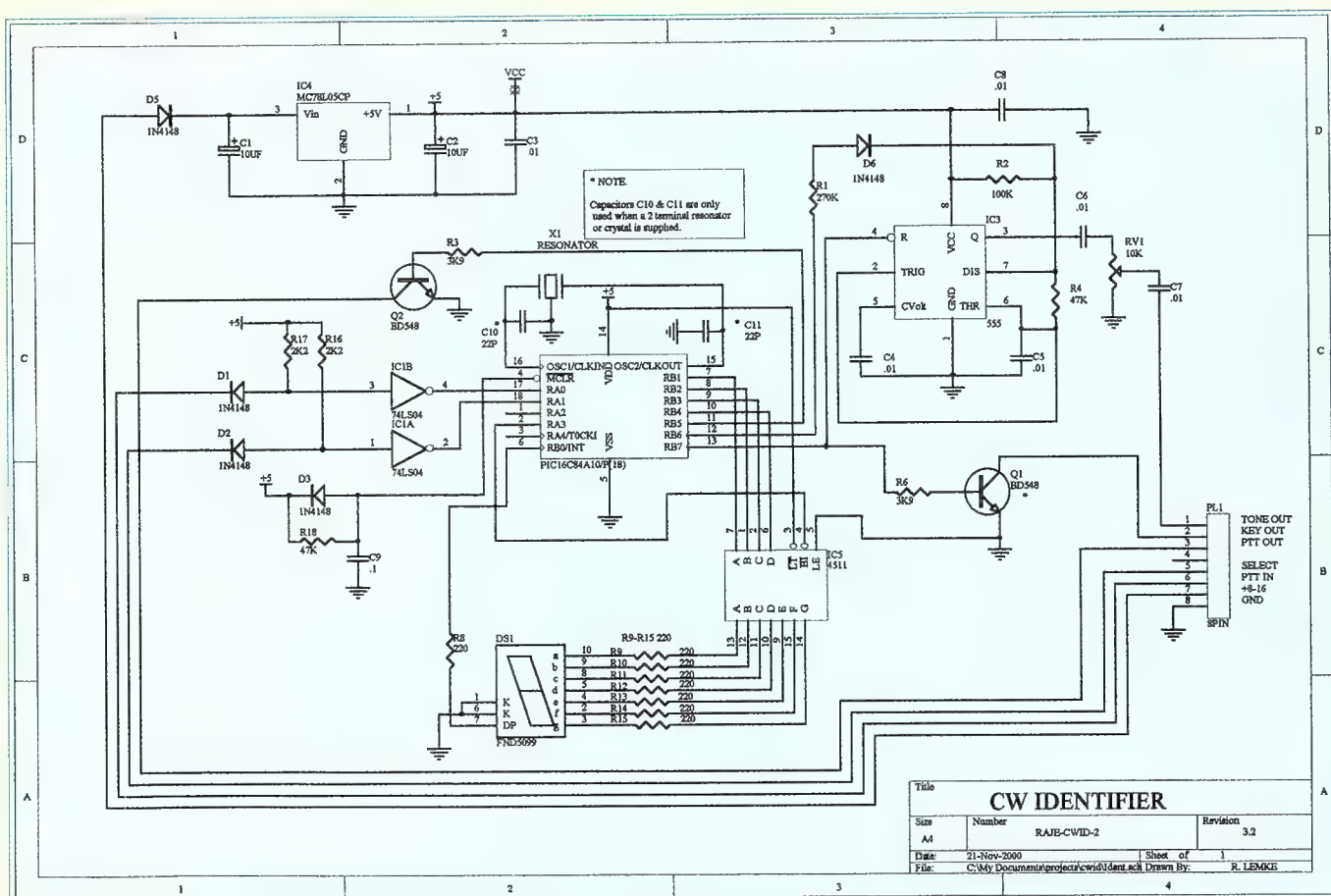
In the end, it seemed it didn't matter where I tuned it, if you'd expect to find a signal there on a decent receiver, the VR-500 found it and presented it with quality audio. And okay, Kingaroy may not be the dirtiest RF environment around for test purposes (in fact this part of the country is delightfully low-RFI), but it is a medium-sized town all concentrated into a few square miles; I sat in the middle of it, with welders, power tools, hospital equipment, telephone and microwave relay towers, pagers, whole tribes of people with mobiles glued to their heads, mall display lighting, all the usual RFI generators — and again, the VR-500 performed better than you'd think was reasonable to expect from something that size, and interference just wasn't a problem.

There is, however, a selectable front-end attenuator if needed. There was little or no problem with orientation or handling of the receiver either; tuned to a weak station, some hand-helds can perform very differently depending on whether they are on a table, in your hand or your pocket. Not so with this one.

Hooked up to 12v (it will accept from 9v to 16v external power), and the discone at home, both barefoot and with the 20dB pre-amp switched in, subjectively, using eyeball / airhole Mk1, there was no discernible difference in the performance of the VR-500 or my base scanner, the UBC9000XLT. Which is pretty amazing, considering the VR-500 is less than 1/32 the size and has more modes. It looked weird sitting on the end of the RG-213U antenna lead-in.

This radio has the performance, low-power requirements, low profile and wealth of capabilities to definitely make it a worthwhile, take-anywhere, listen-to-anything receiver, no matter whether you're going downtown to a boring party, camping at the river, or backpacking across the Himalayas. I'll send it back to you, Chris, honest... it's here on my desk somewhere...

Radiomag thanks Dick Smith Electronics for the loan of the review receiver.



Continued from page 73...

the tone burst through the reset line of IC3. I/O port RB6 of the PIC controls the frequency shift of the tone oscillator during the distinctive two-tone tail operation.

Capacitors C6 and C7 may need to be altered to achieve a good waveform into the microphone circuit. The values used here were suitable in the prototype circuit, which was connected into an audio control console through 600 ohm line transformers.

The supply rail of +8 to +16 volts is all that is required to operate the CW Identifier. D5 in the supply rail protects against reverse voltage, while an on-board regulator IC4 regulates the supply rail to 5 volts for use by the controller.

Assembly

The identifier is constructed on a single-sided G10 PCB. If you purchase the commercial PCB, the component layout has been silk-screened into the board making it easier to place the components.

Using the supplied component overlay, fit all resistors and capacitors first. Observe polarity when fitting the electrolytic capacitors C1, C2.

Next, fit all diodes observing correct polarity, followed by transistors Q1, Q2. Trim off excess component leg and solder all fitted components.

If a three-pin resonator X1 is used, C10 and C11 are not required. This is because the three-leg version has these components within its package.

Fit the IC socket for the PIC, IC2. Fit IC1, IC3, IC4 and IC5 observing correct pin placement. Solder in place.

A square or rectangle style pad denotes pin 1 on the PCB artwork. Remember to observe static handling procedures when handling the ICs. Fit the FND5099 readout and the edge connector. Use the drawing on the component layout overlay to locate pin 1 of the display.

Solder in place. This completes the assembly and you are now ready for the testing and wiring into the transceiver circuit.

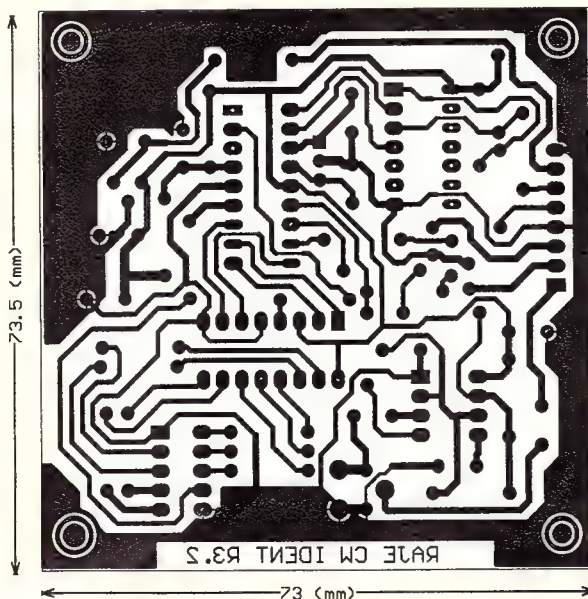
The circuit contains sufficient bypassing to eliminate stray RF fields, and it has been used in stations transmitting 400 watts PEP without any drama. Still, it is recommended that the identifier be mounted into a shielded enclosure for protection against strong RF radiation. The addition of capacitive feed-through and ferrite beads on the input lines would be good construction practice.

The PCB can be mounted so that the 7-segment display is visible, either as part of the shack control console or as an independent plug-in, connected into the microphone line.

Testing

Before fitting the PIC, inspect the PCB for solder shorts and correct external connection. Connect power to the edge connector and observe the current. The unit without the PIC fitted draws approximately 27mA. Check that all chips have +5 volts available at their respective VCC pins.

Remove power; plug the PIC into its socket observing the correct pin placement and re-apply power. On power-up, the identifier will default to mode '0' (no code, PTT control only). Pressing the select button will increment the



PIC through the programmed phrases, indicated on the display as 0 to 7. When the PTT input is taken low, the PIC will switch the output PTT low and start sending the selected CW phrase.

Each phrase is constructed from shorter words. In some phrases the complete CW phrase will not be completed if the PTT is released before the commencement of the last part of the phrase.

If the PTT is released before the end of the phrase, the controller will terminate the phrase on completion of the current word being sent, insert the letter K, then switch the PTT off. To effect the transmission of the full phrase, the PTT needs to be held low for the full phrase. If the PTT remains low after the end of the phrase, the CW phrase will repeat until the PTT is released.

After a short time the 7 segment display will be switched off reducing the power consumption. The decimal point on the display will remain pulsing while CW is being transmitted.

Pressing the select button once after the power save function has activated will cause the 7-segment display to illuminate showing the last selected CW phrase number. Pressing the select button a second time will increment the selection. Phrase selection can only be done when the identifier is at rest. Attempts to change the phrase selection while CW is being sent will be ignored by the PIC.

A suggested circuit for the interconnection of this CW identifier to a transmitter system is shown in Figure 2, although connection of the identifier is flexible and can be varied to suit the user's needs. The Identifier could be connected to a small speaker and placed against the microphone as a hand-held, battery-operated CW modulator.

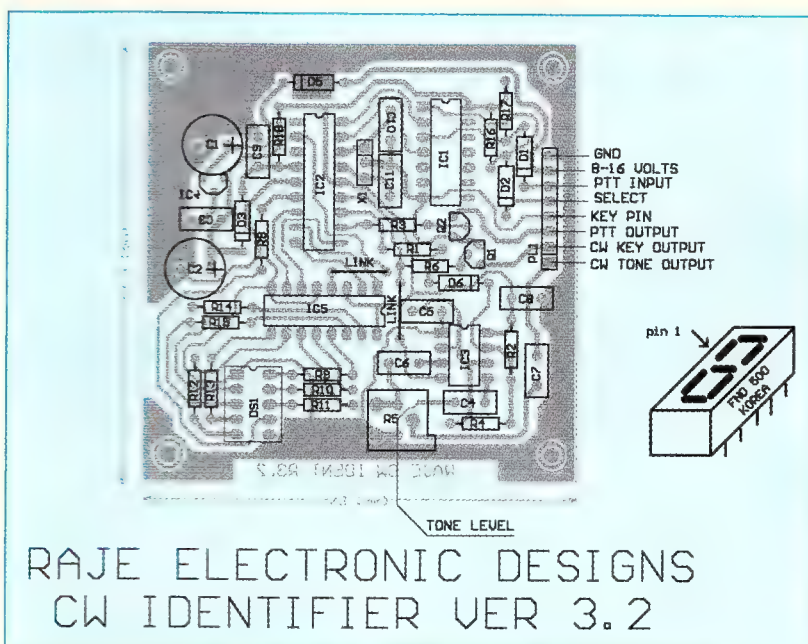
There are a number of identifiers currently in use, mostly by microwave operators for their portable transceivers on the GHz bands. The effect of the two-tone warbling tail has made tuning on these bands very easy. From my own experiences, I know that the use of this identifier has often meant the difference between getting a contact and missing the signal altogether.

The Identifier is well proven and can boast as being critical in the establishment of 90% of the current Australian microwave records.

For the die-hard hobbyists who want to totally build this identifier from the ground up, PCB artwork, circuit and component overlay have been included. I have not included the PIC program as I feel that it is easier to supply programmed PICs on request. Contact Jeremy, VK3TFH at the address below, supplying the call-sign and grid locator that you want loaded into the PIC, and for \$25 including package and post, he will send a programmed PIC to you.

For those who don't want to mess with making their own PCBs, Jeremy has professionally-made PCBs and a kit of parts including the programmed PIC, available at a cost of \$60 plus \$5.50 pack and post.

See <http://www.ansonic.com.au/raje> for more details on how to order over the web, E-mail raje@ansonic.com.au, or to purchase kits for this project by mail, contact Jeremy at this address: RAJE Electronic Designs, PO Box 101, Port Fairy, Victoria 3284



RAJE ELECTRONIC DESIGNS CW IDENTIFIER VER 3.2

RAJE ELECTRONIC DESIGNS CW IDENTIFIER COMPONENT LIST

| Designators | Comment |
|-------------|-----------------------------|
| C1 | 10UF electrolytic |
| C10 | 22P capacitor *OPTIONAL |
| C11 | 22P capacitor *OPTIONAL |
| C2 | 10UF |
| C3 | .01 capacitor |
| C4 | .01 capacitor |
| C5 | .01 capacitor |
| C6 | .01 capacitor |
| C7 | .01 capacitor |
| C8 | .01 capacitor |
| C9 | .1 capacitor |
| D1 | 1N4148 diode |
| D2 | 1N4148 diode |
| D3 | 1N4148 diode |
| D5 | 1N4148 diode |
| D6 | 1N4148 diode |
| DS1 | FND5099 7 segment display |
| IC1 | 74LS04 TTL hex inverter |
| IC2 | PIC16C84A10/P(18) PIC |
| IC3 | NE555 timer |
| IC4 | MC78L05CP 5 volt regulator |
| IC5 | 4511 BCD - 7 segment driver |
| PL1 | 8PIN DIL connector |
| Q1 | BD548 NPN transistor |
| Q2 | BD548 NPN transistor |
| R1 | 270K resistor |
| R10 | 220resistor |
| R11 | 220 ohm resistor |
| R12 | 220 ohm resistor |
| R13 | 220 ohm resistor |
| R14 | 220 ohm resistor |
| R15 | 220 ohm resistor |
| R16 | 2K2 resistor |
| R17 | 2K2 resistor |
| R18 | 47K resistor |
| R2 | 100K resistor |
| R3 | 3K9 resistor |
| R4 | 47K resistor |
| R5 | 10K TRIMPOT |
| R6 | 3K9 resistor |
| R8 | 220 ohm resistor |
| R9 | 220 ohm resistor |
| X1 | RESONATOR *SEE NOTE |

If a 3 leg resonator is supplied, C10 & C11
are not required or supplied

Classifieds...

Alinco DJ-X10E all-mode 0.1-2000MHz H/H scanner. Extras include Dry cell case, PC interface, Prog software & car kit, \$450. Rob (02) 49296326 or rcplayford@bigpond.com

Alinco DX-70TH as new \$1250. **Ranger AR-3300** 10M all-mode \$275. **Yaesu FT-23R** 2m HT \$125. **Digitur 2150** 2M amp \$50. All ONO. Bruce, VK2TNF (02) 9626 5440 bruce.dunmore@getronics.com

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Ranger RCI-2950 in box EC \$375 incl post. **Yaesu FT-8100R** as new \$950, separation kit included. **Uniden UH-100 UHF** as new, used twice \$300. Mark, VK5KMK (08) 8836 7279

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Scalar antenna model G203, frequency 166.945 MHz and Hills telescopic mast, extends to app 10m. Includes roof ridge bracket and ten metres of cable. App 12 metres tall when erected. EC. \$250 ono. Ian or Wendy (07) 3808 2712 or E-mail gillard@optusnet.com.au

Scanner pre-amp, GaAsFET, wideband, designed to improve the sensitivity of most scanners. Variable gain -10dB to +20dB over the 24 to 2150MHz range \$150. Keith, (03) 9898 1373

Shack clean out. Amateur and CB Radios. All must go as no longer required. Send SASE to Paul Meier, PO Box 76, Peterborough, SA 5422 or (08) 8651 2398

Shack clear-out. Icom IC-271H (100w) VHF base rig, \$975; **Ringo Ranger 2m** base antenna, \$55; **Traeger FM-25 2m** mobile rig (2 ch), \$35; **Traeger FM-25 2m** packet rig, \$25; **Traeger FM-25 2m** packet rig, \$25; **Baycom** modem, \$45; **Shinwa** low-pass TVI filter, \$30; **Power supplies** 4 amp, \$25; 11 amp, \$75; 5 amp, \$25; **Wall charger** for TH-22A, \$8; **NiCd battery charger**, \$4; **CD-ROM 32x** drive and sound card, \$30; **PC 386DX** (ideal for packet station), \$30; **PC 386SX** (ideal for packet station), \$25; **PC 286AT** (ideal for packet station), \$20; **PC 386SX** mainboard with RAM, \$5; 3 (three) serial mouse, \$1 each; 6 (six) network cards, \$5 for all; 2mb video card with software drivers, \$2; Assorted computer/printer cables, \$1 each; **Data switch** (connect 2 printers etc), \$15; **Data switch** (connect 4 PCs), \$18; two **MobileOne 80m** mobile antennas, \$15; **MobileOne 27MHz** mobile antenna, \$15; 27MHz 'back-of-set' antenna, \$8; **Antenna** mobile base mount and

lead, \$8. Hank, VK5JAZ 0403 285 940 vk5jaz@radiomag.com

Shack clearance. Icom IC-726 HF + 6M VGC, 2970 VGC, 30A Cont pwr supp VGC, Silver 777 Linear Amp VGC, Electrophone UHF TX 4000 VGC, Realistic 2000 Scanner prog 200 ch VGC. POA. Paul, VK4YPL (07) 4159 5412 or 0413 188 068

Stolen: Yaesu VX-1R dual-band HT, ser no 9E220822. Taken in bag with Pentax camera & telephoto. Please report to Police if offered this gear! Lew, VK2ZIP 0417 231 395

Syntrx UHF multi scan/vote, CTCSS, spare control head. Eeprom contr incl software, in exc cond. Will COD. Buyer pays P&H \$300 John 0417 811 365 joc@octa4.net.au

Tait Orca VHF hi-band HT. 3mths old with receipts, as new in box. 100 Ch, 147-174MHz \$800. **Tait T2020** remote, Ser 1 in GC VHF high 147-174 MHz. \$350. Both radios with CFA and VicPol, no TX. Phillips 11A 13.8V power supply with inbuilt speaker. \$100. David, 0417 038 422 or dcarroll@emergency000.com

Uniden Bearcat UBC9000XLT scanner \$300. **Netset CB** \$30. **Uniden PRO-810E** base \$250. **Electrophone AM CB** \$30. **Scanner mobile** \$40. **Electrophone** power pack \$30. Mark (02) 6962 3705

Uniden PRO-810E 11m AM SSB base station 12W output. Brand new still in box, never used. Unwanted gift. \$250 ono. Rob, VK2XZ (02) 4884 4213

Valves, many, secondhand and new, all cheap. Roy, VK4YRW (07) 3265 2842

Various: Kenwood TS-130S \$500. Home-brew Morse decoder C64 cpu. Teledex 27MHz marine radio. Kenwood TS-520S \$500. ARA mags, various other pieces, some need TLC. Mark, VK2GFR 0411 039 452 or (02) 9671 4832 or rosmarkv@one.net.au

Wanted info on parts for PacComm PicoPacket TNC. David, VK4DJC (07) 4976 9656 or 0429 620 592 davidc@dreamtilt.com.au

Wanted Yaesu FL-1000, FL-2000 linear. Richard, VK2ERF (02) 4844 7147. E-mail rfcfox@optusnet.com.au

Wanted: any info on JIL SX-200 scanner & Tristar compu 20-D scanner. Keith (03) 5428 1938, fax (03) 9740 6533

Wanted: circuit for CB 27MHz SBF sidebander IV any other info. Tony, VK7TU (03) 6227 8483

Wanted: circuit/tech manual of BWD Oscilloscope model 421A. Photocopy or original will be OK. All costs gratefully reimbursed. Arie, VK3DBF (03) 9796 8982 arie@alphalink.com.au

Wanted: Collins radios 1960s onward, must be SSB also R1051D or E radio. Leroy (08) 8377 2915 or nextgen@nextcentury.com.au

Wanted: Copies of manual or circuit diagrams for KW-2000 xcvr & pwr supp by KW Electronics. Will pay all costs. Roger, VK4OS ph/fax (07) 3886 0689, E-mail: RJWHCHC@Telstra.easymail.com.au

Wanted: copy of the technical & users manuals for Icom IC-271A 2m all-mode xcvr. Will pay all reas photocopy and postage. Roger, VK2TEA (02) 4758 7238 or 0410 587 238 rogerco@ozemail.com.au

Wanted: Crown light duty rotator & control box. If control box avail this would do; will pay good money for good eqpt. Grahame L20747, 17 Tumut St, Dudley NSW 2290

Wanted: Handbook, charger and dry cell battery adaptor to suit Icom IC-2SA 2m HT. Ray, VK3VSR (03) 5996 6106

Wanted: HP or Roland A4/A3 pen plotter. Malcolm (02) 9981 6623 malc@ihug.co.nz

Wanted: Icom CM-125 & LC-37, UH-005 SM SP mic. Neil (07) 4122 1802

Wanted: Icom SP3 ext spkrs (two req'd). Ian (03) 9670 4889. Will collect or pay freight

Wanted: manual for Icom IC-AT500 ATU, will pay costs. Owen, VK8CT 0417 96 1139, or E-mail owencastle@yahoo.com

Wanted: scanner users in Launceston area to exchange frequencies and information. Paul 0417 679 950

Wanted: tower suit HF beam, at least 12 metres. Preferred tilt-over or sim. Tino, VK3EGN (03) 5278 2506 or 0407 782 506 tpavic@msn.com.au

Wanted: Valve tester, must be in GC with manuals. David, VK3THY (03) 9439 3649

Wanted: valve HF linear, any cond. Richard, VK2ERF (02) 4844 7147 rfcfox@optusnet.com.au

Wanted: Vibroplex paddle key, to use, not collect! Fair price paid. David, VK3DBD (02) 6027 0570 vk3dbd@rm.quik.com.au

Wanted: working memory unit or ext VFO for Yaesu FT-901/2. John

(07) 3422 2044. jeanl@foxboro.com.au

Yaesu FC-107 ant tuner \$200. **Kenwood AT 230** ant tuner \$180. **Kenwood TS-820S HF** xcvr with mtchg VFO \$450. Richard, VK2ERF (02) 4844 7147. E-mail rfcfox@optusnet.com.au

Yaesu FL-2100Z HF lin amp with manual/cct diagrams \$800. **MFJ962C 1.5kW ATU** \$300. **MFJ949E 300W ATU** \$200. All VGC. Ken, VK4JR (07) 3293 0083 vk4jr@amsat.org

Yaesu FRG-7 comms rcvr, good cond and works well, new narrow band filt, \$200 ono. Paul 0410 406 429. prgilb99@yahoo.com

Yaesu FRG-9600 VHF/UHF comms rcvr VGC with manual, digital freq readout etc \$350. Colin (07) 4926 6971 or 0418 987 165

Yaesu FT-207R VHF HT c/w spkr/mic \$95. AEA Pakratt 232MBX with PacTOR \$120, PacComm TNC Packet, Amtor, PacTOR \$100, Tokyo HL-85V VHF amp \$90. Clive, VK3BUS (03) 5475 2092 charman@netcon.net.au

Yaesu FT-501 digital HF xcvr with matching **Yaesu FP-501** power supply VGC \$420. Maurie, VK2OW (02) 9838 1884

Yaesu FT-736R all-mode V/UHF satellite xcvr with MH1B8 desk mic and manual. Very sparingly used. \$1050 ono. Contact Raj (02) 9211 2824 or vk2ipd@hotmail.com

Yaesu FT-757GX HF xcvr EC, with 2 mob mtg brkts, op & service manuals. Orig pkg. \$825 ono. **Terlin** mobile whip, extra taps for RFDS and 27MHz, 80-10m taps, plus Terlin mount \$255 ono. Graham, VK5ASI (08) 8258 8310 or 0438 825 883 grakat@pic-knowl.com.au

Yaesu FT-980 HF xcvr with manual \$800. AEA Pakratt PK232 with manual \$200. ATN 13-30-8 HF beam \$500. (You remove.) **Drake TR-7 250W HF** xcvr with power supply & manual, mint cond \$1000. Sundry other bits, you collect, no reas offer refused. Mike, VK3WW (03) 5433 3654. Deceased Estate

Yaesu FT-ONE, HF xcvr, VGC. Great perf c/w manuals \$800. **Yaesu FRG-8800 HF** comms rcvr. VGC with manual \$450. **Hidaka VS-22**, 10-15M duo-bander GC \$100. Geoffrey, VK3DNJ, E-mail geoff@hotkey.net.au

Yupiteru MVT-7100 h/h scanner c/w AC adaptor, batts & antenna. Cost \$600, sell \$320 ono. Preferably phone mobile 0414 014 056 or could try (03) 9437 7550

LAST word...

Blue Mountain

At times on your journey through life, you encounter places that are particularly aptly named. None is more so than Blue Mountain.

I first saw the place twenty years ago, and in a world of change, it has hardly altered from that day to this. On the border of the Wombat State Forest in Victoria, and right at the edge of a tiny town called Newbury, Blue Mountain is more of a pimple, really.

The climb can seem formidable, but a fit person can get from bottom to top in half an hour or less, so the place is hardly of Himalayan proportions. On the top the place is unremarkable too, a fire tower amid a rocky outcrop and a bare patch of ground like an old man's bald spot; and yet, for me, the place is full of ghosts.

I was up there just last week with a small corporate group, on the quietest of sunny weekday afternoons, and yet in the far, far distance I had only to look across that unchanged landscape to the old University Radio club camp site and twenty years of time simply peeled away from me, and suddenly I could hear...

...Derek Jones slamming the door of his tiny mini, a car which had no business on any bush track, far less on the 30 degree dirt path up Blue Mountain, fiddling with a hand-held radio in his intense way and staring disapprovingly at those of us who are sitting in the shade, drinking beers and taking it easy. Derek heads into the large auto tent which holds all our VHF radio equipment for the John Moyle Field Day and the rest of us wait gleefully, knowing what is going to happen next.

Moments later, we hear expletives, followed by "This is a pigsty!". No prizes for guessing who said that. I go into the VHF tent and, yes, it is a bit of mess, but no pigsty. The RSPCA would prosecute you for keeping pigs in a place like this. Tinnies adorn every flat surface, pyramids of them are piled atop the radio gear itself, and at regular intervals several of them fall to the ground with a sad little "tink" to join their comrades lying ankle-deep on the floor.

In the midst of these are the two Thompson brothers, ex-students whose status is now unknown, but which will never be investigated too hard because they have all the high-power VHF equipment the Club does not, and moreover are willing to put in 24 non-stop hours on the gear as long as they are supplied unendingly with beer. We are a presence on the VHF bands, no doubt about that, and the desultory argument as to whether the Thompson twins are running legal power is finally resolved when they vaporise the gamma match on their Yagi antenna.

Across the bald rocky top of the mountain, there is an untidy row of typical student cars, old Mazdas and Morris Minors and Valiants, and Dave's HR Holden with rusty panels and no brakes but a monstrous V8 engine that can effortlessly haul the 20kW diesel generator up the fire track and into its present position between the tents.

Driving the genny back down the mountain presents no problem, the main trick with no brakes is to stay ahead of the thing, so that it does not catch up with the car and jackknife the trailer link, sending the whole kit and kaboodle over the side of the track and into the trees.

Beyond the cars is a row of small tents, all full of discarded sleeping bags, most left unzipped by people who are city kids at heart and to whom snakes do not seem real. But wait — one of the tents is moving. Presently Carlo emerges, on his hands and knees, crawling unsteadily toward the vegetation. It's like a national law — there always has to be one person who gets food poisoning. And he tried so hard to kill all the bacteria last night with two litres of cheap red wine, too. Unsteadily he heads, vampire-like, through the mercilessly bright sun and into the nearest bush and darkness. Blaauurgggghhh. It's a proud moment for the environment.

I grab a six-pack and head up the fire tower. Perched at the top is the CFA watchman, a retired local cockie aged about seventy, who earlier that morning raced up the long ladder with a speed that shamed most of us. They breed them tough in Trentham. The watchman gratefully accepts the beer, and we stand together in his little eyrie, looking out over the blue-green ranges of the Wombat State Forest and over the low hills into who knows where. It's a little cooler up here in the breeze, the campsite stretched out below, oddly neat, antennas looking like spiderwebs in the sun, and I suddenly know that, right now, I am having one of the best days of my life.

Down there are people with real technical talent, gifted people, many heading into a world that does not understand how strongly technical folk are fired with real creative spirit. For them, the challenge of the field day is all about radios and antennas, power ratios, distances, propagation, things I am not studying and will never be expert in. For me it's all about excitement, the bush, the people — and that crackling voice from far away that represents one of the last great bastions of adventure in suburbia.

Hysterical laughter reaches us from below; one of the Thomson twins has inadvertently let rip with a mighty belch right next to the Vox, sending this strangest of all signals far across the globe and, for all we know, to alien civilisations light years away where fruitless decades will be spent trying to decipher it.

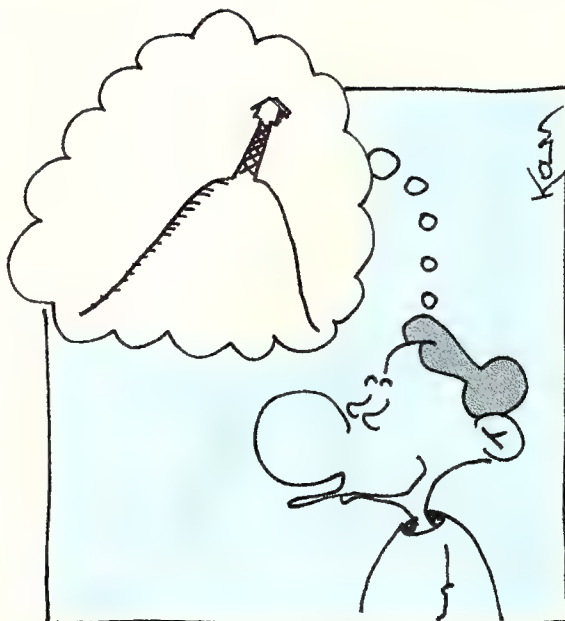
All of it seems timeless, the endless summer of youth, John Moyle Field Days all merging into one over the three or four years of university, and in this untracked landscape I can believe that we

will stay forever hams, forever students, forever young. I make my farewells to the fire watchman and disappear through the trap door in the fire tower, climbing slowly down the staggered metal ladder to the sound of voices and the steady thrum of the generator...

...which fades, softly, softly into the trees as I finally step on to terra firma and survey the top of Blue Mountain, empty of tents, free of cars, absent of young voices and the whistle of radios, as the waters of twenty years slowly close behind me.

I meet my corporate group, take some photos, and head back down Blue Mountain toward the valley. And falling behind us in the distance, ever patient and waiting until next time, the ghosts unload me, step by step.

R



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THE REAL MAGAZINE FOR RADIO ENTHUSIASTS

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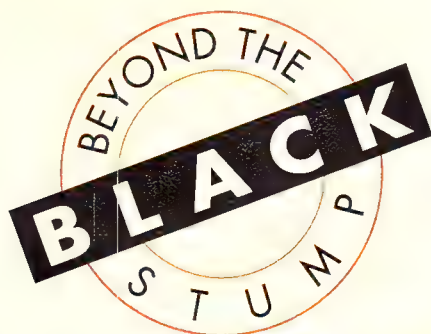
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By Steve Johnston
E-mail: vks737@radiomag.com

Beyond the Black Stump



Hi folks, and welcome to the first issue of *Beyond the Black Stump* at our new home at *Radiomag*. As before, we will be looking at communications for those travelling in this great country of ours. There will be lots of new information, and for our new readers we will occasionally be re-running some earlier information that we feel is important. In the past, this column used to appear every second or third month, and will continue to do so (I can hear Chris our Editor crying right now – he thinks I am going to give him editorial copy every month!), although any urgent changes and news will appear as newflashes in the intervening issues.

Anyway, as they say, on with the column...

Anyone who travels around Australia, whether it is on bitumen roads close to cities, or on true outback roads such as those pioneered by the late Len Beadell, will realise that Australia is a large country. You do not have to be in the remotest part of the country to be in trouble as the attached story from Glen Parkinson shows, he was only minutes from home when his problems started. While travelling it is essential that travellers are adequately equipped for their trip:

Firstly, your vehicle must be in A1 condition mechanically — there is nothing more frustrating (and usually very expensive) than coming to a halt with a minor or major mechanical failure in the middle of the bush, and pushing a vehicle 500km along a dirt track can be very tedious. Make sure that your vehicle insurance covers you for recovery in the Outback — many stop the minute you leave a designated road.

As well as your vehicle, you must also be self-sufficient with items such as food, water and clothing to cover the length of your trip — how many times have we heard of people being rescued in the Simpson

Desert with no supplies — usually when questioned by the authorities they answer is that "on the map it's only 400km from Oodnadatta to Birdsville and we thought we could do the trip easily in one day!!"

How prepared are you for your trip? How well do you know your vehicle? How would you handle an emergency should the situation arrive? Many tourists have arrived in this country and hired a 4WD vehicle and driven off into disaster, even death, due to not knowing simple basics such as how



Australian National 4WD Radio Network Chairman Steve Johnston, VK5ZNU

to engage the front hubs in the vehicle. This scenario has been repeated many times, and not just by overseas tourists. If you are not confident, get yourself some training either through a recognised 4WD Club or through many of the Accredited Driver Training providers – the essential thing is to make sure that you are doing an accredited training course. Consider joining a 4WD, Caravan or Motorhome Club; these are a good source of knowledge about vehicles, radio communications procedures, trip locations, driving techniques etc. If you do not know the location of your nearest club then contact the Australian National Four Wheel Drive Council, or your local State 4WD Association.

Having looked at the points above there is one very important aspect that needs considering, that is COMMUNICATIONS.

"No worries, my new you-beaut digital mobile phone will do the job perfectly. After all, the salesman told me that 95% of the population is covered, so there obviously isn't too many spots that I won't be able to get through". How many times have we heard that comment? Unfortunately the dealer forgot to mention that 95% of the population live in about 5% of the country, which leaves the vast majority of the outback with no mobile phone coverage.

GSM phones are designed to operate to a maximum distance of 32km from the base transmitter, and further than this distance the time delays involved in the signal travelling between the base and the phone prevents correct operation. CDMA phones operate on a slightly different principle and can operate at maximum distances of around 60–80km, a slight improvement but still not at all suitable for the hundreds of thousands of square kilometres of the bush.

Okay, so we have now decided that the trusty mobile phone won't work, so what are the alternatives?

The following gives a comparison of the different types of communication systems that are presently available to outback travellers.

27MHz CB

27MHz CB is the most basic form of communications available for travellers, a basic AM unit will cost you around \$100 plus an antenna. AM sets operate with a power output of only 4 watts AM and are generally limited to a range of a few kilometres up to a maximum of approximately 10–20km.

Where once upon a time AM CB was the rage, their usage these days is primarily limited to short range, low cost communications between vehicles when travelling in convoy.

If you want to go a bit more up market then you can go for an SSB unit with an output of 12 watts. Obviously the higher power, coupled with the more advanced technology of SSB, is going to give a better range although under normal conditions this is generally limited to around 40km maximum.

27MHz is very prone to "skip" where at certain times signals may travel many thousands of kilometres but cannot be heard "just down the road". Generally, 27MHz CB cannot be relied upon for emergency communications, but you may be lucky — at the time you are in trouble somebody may just hear you at the other side of Australia, and better still they may not treat your call as a hoax!

Another problem with 27MHz CB is that it is very susceptible to ignition and other man-made noises which generally limits its use in mobile installations over large distances. Also, the further north you travel, the worse the interference from overseas fishing boats using high power becomes.

UHF CB

Operating with a maximum power output of 5 watts, UHF CB signals are generally line-of-sight, giving a range of typically 10 to 30km maximum. By using repeater stations it is possible to greatly extend the range, and because UHF CB uses FM (frequency modulation), as compared with AM and SSB on 27MHz, the quality of the signals are improved and noise and interference is reduced. The use of high gain antennas also improves the performance of UHF CB.

The main application of UHF CB is inter-mobile, base to mobile, and base to base over limited distances. The use of 'Selcall' (Selective calling) allows users to contact other suitably-equipped users without the need to listen to other traffic on the channel.

UHF CB also makes use of repeater stations in many parts of Australia, particularly on highways and in pastoral areas, these repeaters extend the range of communications – generally the higher the repeater is located the greater will be the range.

UHF CBs start at around \$300 plus antenna and most sets these days come with scanning as standard, while features such as Selcall and voice scrambling are available on some models.

Satellite Communications

Satellite communications can provide telephone, fax and data communications to almost anywhere in the world. There are two systems presently in use, one using high orbit satellites, the other using a series of low orbit satellites. Telstra and Optus both use high orbit satellites providing coverage to vehicle-mounted and briefcase-style units, with typical costs ranging between \$5000 and \$8000.

The Vodafone Globalstar system utilises hand-held units connected via a series of low orbit satellites which can also be used on Vodafone's GSM service when within range, and these units cost between \$1800 and \$3000.

Whilst satellites can provide coverage to most parts of Australia, the costs including monthly rental charges and timed call charges are presently outside the scope of the average four wheel drive user who makes the occasional trip into the outback.

The main users of satellite phones are business people, mining companies etc that need 24 hours a day telephone and data communications where cost is no limitation. For the average four wheel driver who spends a few weeks a year in the bush a far cheaper option is HF SSB radio.

High Frequency SSB

Using frequencies in the range of 2 to 26MHz, and using powers between 25 and 100 watts, HF can offer reliable, low-cost communications over thousands of kilometres. The typical cost of new equipment ranges from \$2600 for a basic 20-channel radio with a tapped whip antenna to around \$3300 for a 450-channel radio fitted with automatic telephone dialling and an automatic tuning antenna.

Modern features such as Selcall allow users to reliably make contact with other users and bases around Australia, while some transceivers allow the connection of a GPS receiver to pass location details to other users as well as Direct Dial Radio-Telephone calls through suitably-equipped bases.

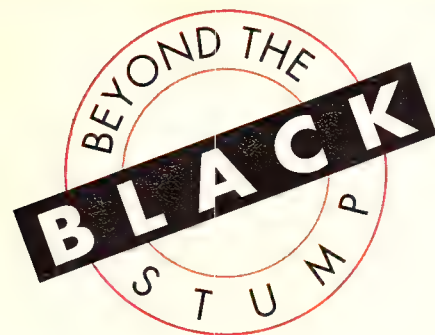
HF radios can also provide entertainment in the form of broadcasting stations such as Radio Australia, BBC World Service, Radio Netherlands, Voice of America and so on, as well as weather services, time signals etc.

If you cannot justify the cost of new equipment, then there is a great range of second-hand sets available, and while these sets may not have some of the fancy features of the newer sets, are still capable of providing years of excellent reliable service.

HF can offer no-cost communications between vehicles travelling in the outback as well as to bases such as those operated by the Royal Flying Doctor Service, Telstra and the VKS-737 Australian National 4WD Radio Network (of which Steve is the Chairman. Ed.).

There are nominal licensing costs associated with the use of HF radios, and to use the VKS-737 Network there is a yearly membership fee of \$66 (which includes licence fee), although a discount of \$11 applies to members of recognised clubs, associations, emergency service organisations etc.

To use the RFDS requires an Outpost Mobile Licence at around \$32, and to use Telstra there is a yearly subscription fee based on the level of service required (ranging from around \$22 up to around \$700 per year).



Royal Flying Doctor Service

The RFDS has been around since 1928 providing medical help for those living, working and travelling in the outback areas of Australia. Bases are located at Carnarvon, Derby, Kalbarrie, Meekatharra and Port Hedland (with control from Jandakot) in WA, Cairns, Charleville and Mt Isa in Qld, Broken Hill in NSW, Alice Springs in NT and Port Augusta SA.

Contact with the RFDS is established by selecting the most suitable frequency for the nearest RFDS base and pressing the 'emergency alarm' button on your radio for approximately 20 seconds. The RFDS can provide medical advice as well as providing medical evacuations in most parts of Australia. Some bases also provide information such as daily weather reports and daily news services (see panel below).

Access to the RFDS bases at Broken Hill in NSW and Jandakot in WA can also be made using Selcall through the automatic telephone interconnects at all of the VKS-737 bases (using VKS-737 frequencies). Some VKS-737 bases can also provide manual telephone interconnection to the RFDS.

Telstra

Telstra provides telephone services for outback travellers through its bases at Alice Springs, Brisbane, Darwin, Melbourne and Perth. Automatic Direct Dialling (RDD) only is available through Alice Springs, while Operator Connected Calls and Direct Dial Calls are available through the other bases. Full details of Telstra Services and charges can be obtained by contacting their Freecall Information Line on 1800 81 0023

VKS-737 4WD Radio Network

The Australian National 4WD Radio Network Inc is an Income Exempt Charity, a Deductible Gift Recipient and is registered as a Public Benevolent Institution as "a non-profit institution whose main objectives and activities are the direct relief of poverty, sickness, destitution, suffering or misfortune and operate for the benefit of the community or a section of it, and assisting those in need on a non-discriminatory basis".

The Network, which commenced operation in 1993, has nine base stations located at Adelaide (SA), Alice Springs (NT), Cairns (QLD), Darwin (NT), Derby (WA), Newcastle (NSW), Perth (WA), Sandstone (WA) and St Marys (TAS). All bases operate on the following five voice-only frequencies:

- Channel 1: 5455kHz
- Channel 2: 8022kHz
- Channel 3: 11,612kHz
- Channel 4: 14,977kHz
- Channel 5: 3995kHz

An application was lodged with the Australian Communications Authority in August 2000 for additional 8 and 14MHz data-only frequencies for the Alice Springs Base to allow the use of GPS Position Reporting and Page-Calls, however at the time of going to print no reply has been received from ACA as to whether or not these frequencies had been approved.

All bases are equipped with state-of-the-art automatic telephone interconnect units which allows them to be operated by any of our network staff located anywhere in Australia. This equipment means that any of the Network operators can bring up any base either singularly or as multiples, ensuring that the Network can operate with optimum efficiency.

A typical example is that if there is local interference in Perth during sked time which is making reception difficult, the operator can transmit from Perth, and receive via Sandstone and/or Derby or Adelaide where reception may be much clearer.

The Network provides the following to its 4000-plus members:

- Free-to-air mobile communications between VKS-737 members anywhere in Australia at anytime.
- Bases which act as contact points for position reporting and safety logging as well as passing messages to and from home or other Network members.
- Emergency medical advice and support from the Royal Flying Doctor Service Bases at Broken Hill and Jandakot.
- Manual GPS position reporting at all bases.
- Access to the Australian Customs Service Customs Watch Centre in Canberra, which allows members to report suspicious activities such as smuggling of plants and wildlife, illegal immigrants, drugs etc.
- Access to 4WD repairs and recovery, 4WD supplies, accommodation, comprehensive motor vehicle insurance at discount rates.
- Members regularly receive updated user lists and also copies of the network's own magazine, *Network News*, giving details of network events, special offers, general information etc.
- Regular daily voice schedules through most bases for the benefit of those members using 'basic' radios such as Barrett SB220 and SB225, Codan 6801, 6924, 7727, 8525 and X2, PCM Hawk and Kestral, Traeger 5x5, Lynx, Safari, Scout and Wagner C1-25, 1729, LX1200 and LX1700.
- Direct Selcall access to SA Police Communications Centre, Perth, Alice Springs, Eucla and Wiluna Police and RFDS Bases at Jandakot and Broken Hill.
- Direct access to Police, SES and National Parks vehicles fitted with the VKS-737 frequencies.

Further information about the VKS-737 Network can be obtained from its web-site at <http://www.vks737.on.net> or alternatively E-mail the Chairman at info@vks737.on.net or vks737@radiomag.com

For those without E-mail, you can write to PO Box 270, Elizabeth, SA 5112, or telephone (08) 8287 6222.

Australian Communications Authority
F.A.C.S.I.M.I.L.E T-R-A-N-S-M-I-S-S-I-O-N

File Reference: X1999/868.3

Attention: Ken Metcalf
Organisation: Citizens Radio Emergency Service Teams - NT Inc.
Telephone: 08 8952-3479
Facsimile: 08 8953-5221

From: Peter Allen
Group/Team: Customer Services Group / Customer Access Management
Team
Telephone: 02 8219-5378
Facsimile: 02 8219 5393
Email: Peter.Allen@aca.gov.au

Date: 7 December 2000

Page: 1 of 1

Re: Emission Designator Enquiry

Mr Metcalf

Thank you for your enquiry about emission designator 3K00J3E. As I explained in our telephone conversation on 24 July 2000, this emission designator refers to a single sideband, suppressed carrier transmission occupying a single channel containing analogue telephony information and occupying a bandwidth of 3 kHz.

In relation to HF licences which only stipulate 3K00J3E emission, the ACA does permit selective calling where it is in support of voice transmissions and where it only occupies a very small amount of time in relation to the total transmission time. The ACA does not however permit data (such as for beacon calls, GPS, emails, internet access, etc) to be transmitted under this emission designator.

I hope this satisfactorily answers your enquiry.

Regards
Peter Allen

CAUTION
The information contained in this facsimile may be confidential.
If this message is not the intended recipient please notify the ACA immediately and destroy the transmitted copy.
Murray Purdie, Executive Director, PO Box 78, Belconnen, ACT 2616, Australia
Phone: 061 2 6256 5000 Fax: 061 2 6256 0300

Isolation Can Be Your Backyard

By Glen Parkinson, VKS-737 user Victor 781

I am writing this article not only to thank the VKS-737 Network, but to make people aware that the isolation and remoteness can start in your own backyard. Let's look at the words *remote* and *isolation* for a moment... it's something that springs to mind when we think of the outback. Remote and isolated to me is being somewhere on your own, away from being able to sight and communicate with people.

I live in the township of Anglesea, which is in Victoria on the Great Ocean Road south of Geelong. Anglesea is at the start of the Otway Ranges which is a playground for campers, bush walkers, four wheel drivers and any other outdoors enthusiast. This is my backyard, but it was also my place of isolation and remoteness in an area in which I live.

Last year I was involved in helping our local scout group plan a hike with their push bikes. We did a bike hike the year before from Anglesea to Queenscliff, but this time the kids

wanted to be a bit more adventurous, so we planned a ride though the Otways. This ride was going to be fun, it was a lot further than the previous ride and the kids were looking forward to getting themselves and their bikes covered in mud as most of their ride was on dirt roads and four wheel drive tracks. Well, covered in mud we got. It was decided at the meeting we had before the hike that I was to drive the tracks to make sure that it was not too far and to see what the camp site was like as we were having some rain in the area. As I was the only one with a four wheel drive at the time and was also going to be the vehicle that would follow on the hike with the kids gear, I happily said I would test the tracks (any excuse for a play of course!).

On Friday morning, the day before the hike, the dog and I left to check the tracks and of course it was raining. I travelled the tracks and inspected the camp site which was half under water, spoke on the phone with one of the leaders and it was decided that we

would attempt the hike. The only problem was the distance, so a car shuffle was going to be needed. I had heard of a track that we could take that would help in shortening our trip so I decided to investigate. But first I needed fuel and had to drive all the way to Colac to get it, at least there was a McDonalds there and yes the dog did get some chips. I got my fuel and headed back to find this short cut.

When I got there I was going to go in as far as I could get the vehicle. You could drive in until you got to the creek, walk over the foot bridge and follow the track to the camp site. So that is what I started to do until I noticed that I was driving down hill on clay while it was raining and we all know how slippery wet clay is. Just inside the track there were several hollows, the first one I went through but the second one I approached I thought I'd better not attempt. Even though they were not deep they were on a hill, so I applied the brakes but we just kept on sliding. After doing a one hundred and fifty point turn on this narrow slippery track I made about four attempts to get back through but had no hope of getting back out.



Royal Flying Doctor Service News

The following information will impact many users...

"Radio traffic continues to decline as users move to new technologies such as satellite telephones. Radphone traffic had averaged less than two calls per day in the six months up to the end of September, 2000. The cost of providing the service now far outweighs the call charges received. All other RFDS Sections have noted a similar decline and all have taken the step to cease providing the Radphone service.

"As a result of recent changes to the Telecommunications Act, the Service must now also be formally licensed as a Telecommunications Carrier if we are to continue to provide the Radphone component of our HF Service. Users of the Radphone service would also need to be licensed with RFDS as well as any other providers they intend to use. The current Non-assigned Outpost licence will however be sufficient for all of the other HF services that we provide, including emergency communications.

"As a result of these developments, RFDS Western Operations will be discontinuing the commercial Radphone traffic with effect from Monday 22 January, 2001.

"After this date, the HF service will consist of a 'sked' of approximately 30 minutes commencing 0700 hours each morning, Monday to Friday, and from 0830 weekends and Public Holidays, for news, weather and road information broadcasts. If users wish to check that their radios are operating correctly, these checks should also be undertaken during this period.

"Our Emergency service will continue to be available 24 hours per day for the purposes of providing medical advice, summoning help etc. The Service will still have the capability to connect these calls into the telephone network if the situation warrants it. Such emergency calls will be at no cost to the caller.

"5300 and 5360 kHz will continue to be the primary emergency call frequencies. Supporting them will be the existing 2MHz, 4MHz and 6MHz frequencies allocated to our bases around WA.

"The Service would like to extend its appreciation and thanks to the 'regulars' on the net.

"Should you need further clarification on the above, please contact either Frank Tuson or Stephen Lansell, at Jandakot airport, on (08) 9417 6300 during office hours."

Non-Voice Traffic on VKS-737 Frequencies

We mentioned above that the five frequencies used by VKS-737 are licensed for *voice use only*, and that other forms of use, including GPS and Page-Call are not permitted. In the past, members have been advised that they must identify themselves by voice before sending a Selcall, and luckily the majority of members do so.

We have been challenged to the validity of our comments on several occasions by other users on the frequencies who send out large numbers of sometimes near continuous Selcalls, Beacon Calls, Page-Calls etc, and as a result the Australian Communications Authority was asked to give us written advice on the matter.

We quote from the reply received from Peter Allen, Customer Services Group/Customer Access Management Team"

"Thank you for your enquiry about emission designator 3K00J3E. As I explained in our telephone conversation on 24 July 2000, this emission refers to a single sideband, suppressed carrier transmission comprising a single channel containing analogue telephony information and occupying a bandwidth of 3 kHz.

"In relation to HF licences which only stipulate 3K00J3E emission, the ACA does permit selective calling where it is in support of voice transmissions and where it only occupies a very small amount of time in relation to the total transmission time.

"The ACA does not however permit data (such as for beacon calls, GPS, E-mails, internet access, etc) to be transmitted under this emission designator."

Well, that's it for this month! If you have anything that may be of interest to readers then please send it to me at vks737@radiomag.com

This did not worry me at first until I realised that I had unpacked my recovery gear to fit all the kids' gear in for the hike. It was then I drummed up some HF help. I radioed through to St Marys base and told them of my embarrassing situation. They did all that they could do in contacting someone to get me out, but it was looking grim and I thought that I was going to spend the night out in the cold.

I had tried every trick in the book to get up the track and got soaked to the bone in doing so. The only one that was not wet was the dog, curled up on the seat with the heater going, sound asleep. Being wet, getting very cold and it starting to get dark can be a dangerous situation.

Even though I know the area it was to easy to get lost in the dark so I was not going to even think of walking out. Eventually St Marys got hold of some-



one and I was rescued at a cost of fifty dollars (yes I know, that's cheap).

The next morning I wore the egg on my face and the kids had great delight in rubbing it in. We did start the hike but the hail, the mud that kept jamming up the kids' bike wheels, and the impassable roads that I kept slipping off put a stop to our event and we all

went home to our heaters. I have now fitted a winch to my vehicle and have made a rule that everyone should follow: **Never leave your recovery kit behind** as you never know when you may need it!

Looking back on that situation I was very lucky that I go out of it the way that I did. The point that I am saying is that no matter whether it is the out back or the bush track you regularly take that is close to home, if something goes wrong and you aren't properly prepared then you are playing with lives.

It is amazing how remote and isolated your own back yard can become when you are caught out in it.

We all enjoy travelling the outback and know the dangers that go with this country of ours, but how well do you know your own back yard?

Are you prepared?

Many thanks to St Marys base.

R.F.D.S. Western Operations

Controlled from Jandakot Airport

[1800] 62 5800

Can also be accessed through
VKS737 Adelaide - Selcall 0611
VKS737 Alice - Selcall 0811
VKS737 Darwin - Selcall 9411
VKS737 Derby - Selcall 9211
VKS737 Newcastle - Selcall 6811
VKS737 Perth - Selcall 0511
VKS737 Sandstone - Selcall 8911
VKS737 St Marys - Selcall 0711

VJB Derby

2792, 5300, 5360, 6945kHz

VKL Port Hedland

2260, 4030, 5300, 5360, 6960kHz

VJT Carnarvon

2260, 4045, 5300, 5360, 6890kHz

VKJ Meekatharra

2260, 4010, 5300, 5360, 6880kHz

VJQ Kalgoorlie

2656, 5300, 5360, 6825kHz

R.F.D.S. Central Section

VJD Alice Springs

2020, 5410, 6950kHz

[08] 8952 1033

VNZ Pt Augusta

2020, 4010, 6890, 8165kHz

[08] 8642 2044

VKS-737

ALL BASES

Ch.1. 5455kHz

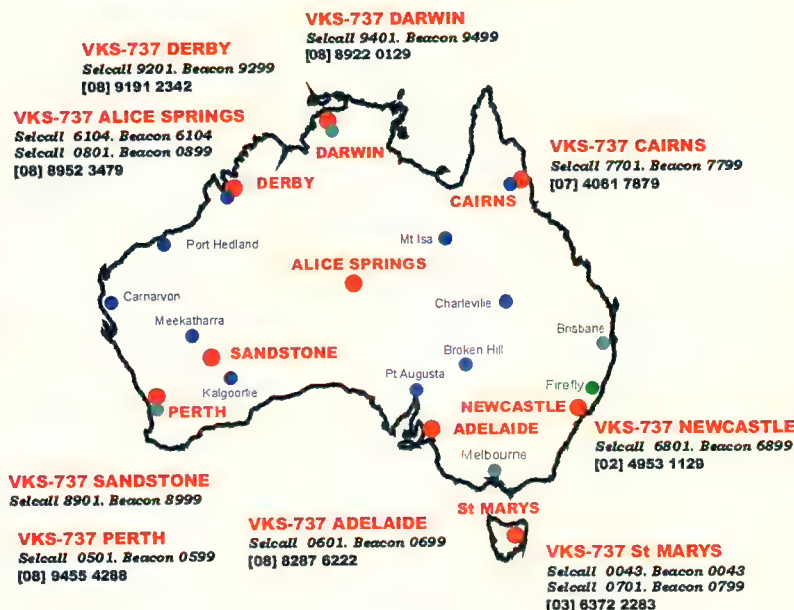
Ch.2. 8022kHz

Ch.3. 11612kHz

Ch.4. 14977kHz

Ch.5. 3995kHz

VKS-737 - Penta Comstat - Royal Flying Doctor Service - Telstra Bases.



R.F.D.S. Queensland Section

VJN Cairns

2020, 2260, 5145, 7465kHz

[07] 4053 1952

VJI Mt Isa

2020, 2260, 5110, 6965kHz

[07] 4743 2800

VJJ Charleville

2020, 2260, 4980, 6845kHz

[07] 4754 1233

R.F.D.S. South Eastern Section

VJC Broken Hill

2020, 4055, 6920kHz

[08] 8080 1777

Can also be accessed through

VKS737 Adelaide - Selcall 0612

VKS737 Alice Springs - Selcall 0812

VKS737 Darwin - Selcall 9412

VKS737 Derby - Selcall 9212

VKS737 Newcastle - Selcall 6812

VKS737 Perth - Selcall 0512

VKS737 Sandstone - Selcall 8912

VKS737 St Marys - Selcall 0712

VZX Penta Comstat - Firefly

Ch 429, 608, 836, 1234, 1642, 2243

[02] 6559 1888

Telstra

VID Darwin

Ch 415, 811, 817, 1227, 1231, 1622

VIB Brisbane

Ch 405, 802, 817, 829, 1203, 1231,

1602, 2203

VIM Melbourne

Ch 404, 811

VIP Perth

Ch 427, 806, 1226, 1604

Common Selcall Call Channels

607, 834, 1229, 1610

Australian National 4WD Radio Network Inc.

PO Box 270, Elizabeth, SA. 5112. Telephone [08] 8287 6222

email info@vks737.on.net web site http://www.vks737.on.net

VKS-737 Serving Outback Travellers since 1993



CW Identifier

By Russell Lemke, VK3ZQB

This project was born from the need for a distinctive identifier for weak signal microwave communications. An identifier that was so different that it could not be mistaken when tuning across the band, listening to signals on the noise floor of the receiver.

Identifiers that use continuous carrier tails are often confused with a 'birdie' or other extraneous noise. The original design used in my microwave transceivers had only one phrase consisting of my call sign followed by two-tone warble tail. The tail is the most recognisable part of the identification when the signal is extremely weak. Because it is a two-tone warble, on a SSB transmission the two-tone composition causes a frequency shift which can easily be recognised when compared to a continuous carrier tail.

The original concept of the CW Identifier has been expanded in this project with more phrases, so that it can be integrated into the shack audio control panel. The original circuit used a series of clock generators, dividers and EPROM, to produce CW.

The production of the code in this project has been simplified by the use of a 16F84 PIC, an idea put forward by Jeremy, VK3TFH.

Jeremy was up to date with these micro-PLCs, and as my expertise with machine code started and finished with the Motorola 6800 series many years ago, he got the job of modernising the original EPROM version, resulting in this project.

Using the PIC has reduced the component count and size of the PCB, as well as being simpler to program and offering some extra operating features. This design has the flexibility to perform a number of jobs. With minor variations, it can be used as a beacon controller or as a simple repeater controller. All that changes is the software loaded into the PIC.

A version specifically designed as a beacon has been produced for the VK5VF microwave beacons in Adelaide. It is planned to develop software to allow this board to be used for a dedicated repeater controller. It would be a basic controller with selectable timer and PTT control. More of that in the future...

In this article I am describing a CW Identifier suitable for connection to a transceiver or into an audio control console controlling the shack transceivers.

Circuit description

The 16F84 PIC has been programmed with the operating program, user's call sign and grid locator. The program caters for seven different phrases that can be sequentially selected by a push button connected to pin 5 of the edge connector. Repeated pressing of the button

cycles through the phrase selection, which is indicated on the 7-segment display mounted on the PCB.

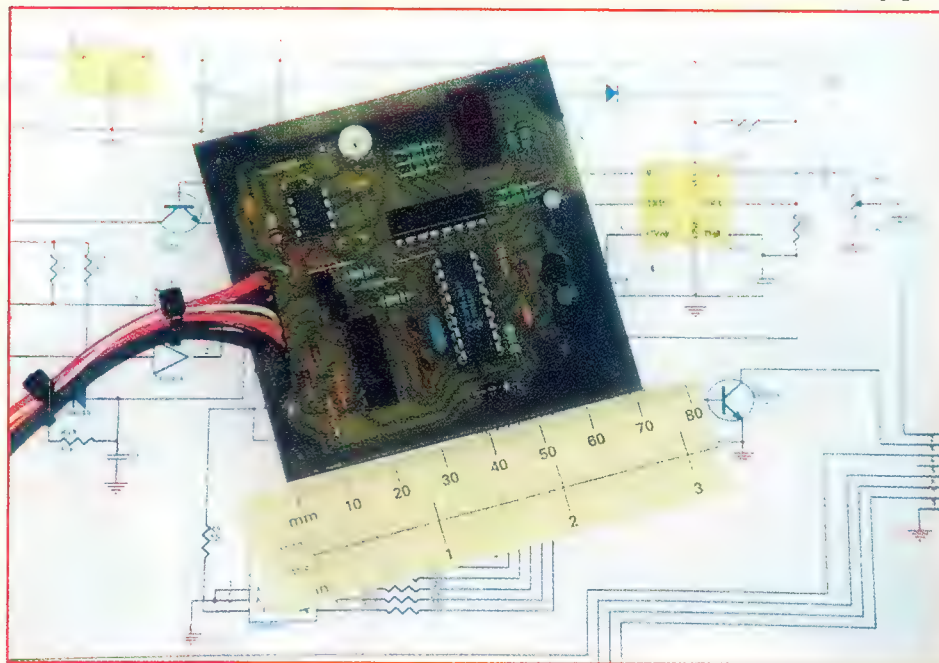
The circuit diagram, **Figure 1**, shows the general circuit of the identifier contained on the PCB. External inputs are buffered through diodes and TTL inverting buffers, protecting the PIC from external voltage overload. All inputs to the controller only require a grounding of the input line to effect operation.

Because of the current consumption of the display (20mA per segment), the Controller will shut down the display 30 seconds after a selection has been made, reducing current consumption. It is re-activated by pressing the select button again.

When the PTT line is grounded (pin 6 on connector PL1), the Identifier switches the output PTT line to ground (PL1 - pin 3), then sends the selected CW phrase either as a 700Hz tone to the microphone line (PL1 - pin 1), or as a switched key line (PL1 - pin 2). The controller will hold the output PTT low until the completion of the current phrase being transmitted.

Both the CW key and output PTT are active low outputs, and can sink a maximum current of 200 mA. The 700Hz tone is generated by IC3, and its level is set by RV1. I/O port RB7 from the PIC controls

Continued on page 62



Phrases contained in the identifier

- 0 No code but output PTT operated.
- 1 DE [call sign] K
- 2 DE [call sign] warble tail K
- 3 DE [call sign] continuous tail K
- 4 DE [call sign] [grid locator] K
- 5 CQ CQ CQ DE [call sign X 3] K
- 6 K (at end of transmission)
- 7 Beep (at end of transmission)

Used to make the identifier transparent when not required
Rapid identification confirmation
Weak signal identification and beacon
Normal identification and beacon
Information beacon
Auto calling signal
For weak signal operation ending signal
Alternate weak signal operation ending signal

Table 1

PROPAGATION

ABOUT THESE CHARTS

The data on these pages are graphs showing forecasts for expected HF operating conditions both with Australia and between Australia and a number of important overseas destinations. The information they contain is prepared by **IPS Radio and Space Services**, a division of the federal Department of Industry, Science and Resources. IPS monitors changing radio conditions — which are affected most greatly by fairly predictable changes in solar activity — and issues reports and warnings based on that data.

The graphs on the left-hand page show DISTRICT information for selected areas, many of which are home to VKS-737 base stations. We know that, in general terms, we use the lowest frequency possible. What these charts tell us is how likely we are to work a base station at the shown location at given times of the day. The UTC (GMT) time is shown. Subtract 10 hours for Eastern Australia, 8 hours for Western Australia, and so on.

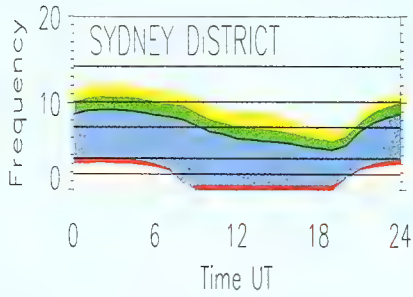
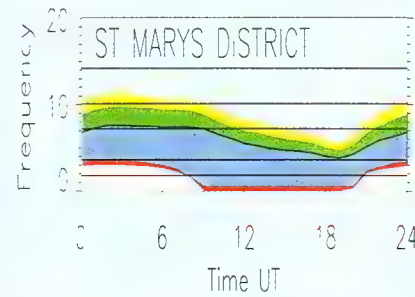
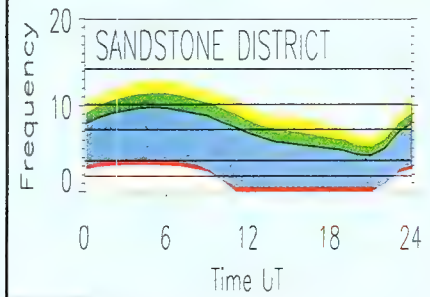
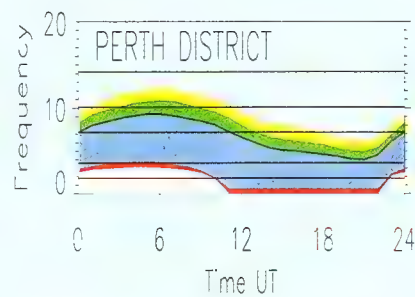
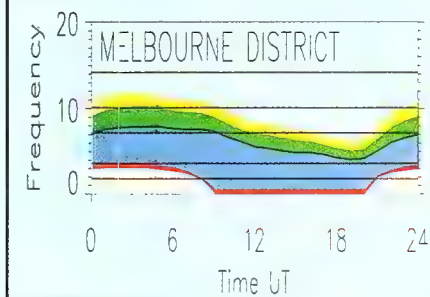
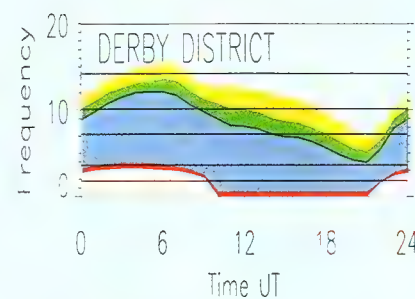
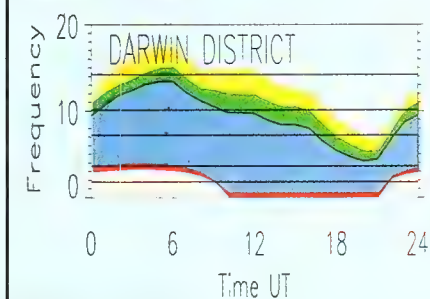
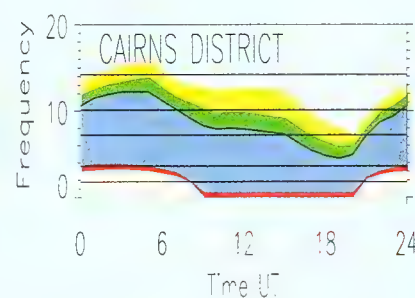
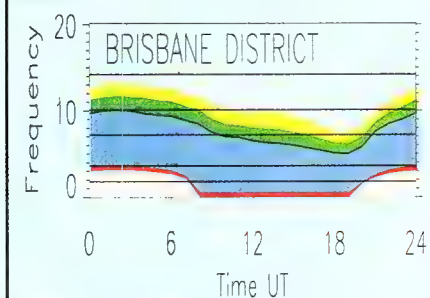
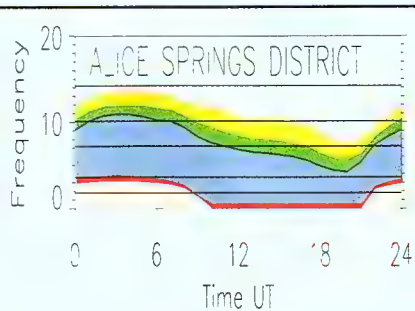
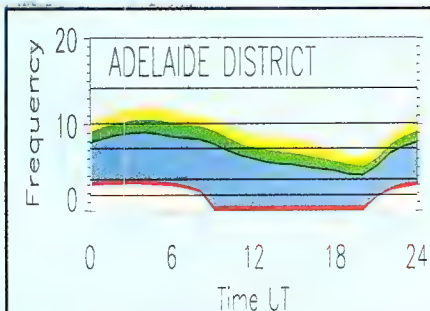
The data on the right hand page is specifically aimed at Australian radio amateurs keen to work overseas DX stations. As a result of many requests, the data has been extended to include the 6m amateur band. As we have introduced the new local data on the left page, the data on the right is now generalised to cover stations in all parts of Australia, and should also give New Zealand stations a reasonable idea of their propagation as well.

In both cases, the horizontal axis of each graph represents the hour of the day expressed in Universal Co-ordinated Time or UTC ('z'). The vertical axis shows the entire HF spectrum with a horizontal line representing each HF amateur band.

The maps are easy to read. First go to the map which looks closest to the area in which you are interested. Look up from the time and across from the frequency to the point at which the two variables merge. Note which colour scale — if any — appears at the intersection of the particular time and frequency combination for that area and refer to the legend (right) to find the sort of propagation most likely to apply. If the space is blank the forecast is not good — your time and frequency combination is unlikely to allow communication to the destination station.

The main thing, then, is this: when reading the charts, if a particular frequency band is indicated as not propagating, try a frequency that the charts suggest as being more suitable.

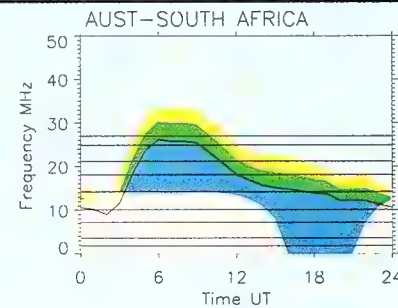
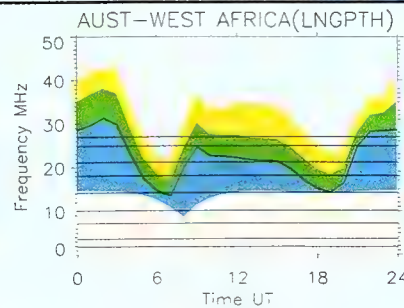
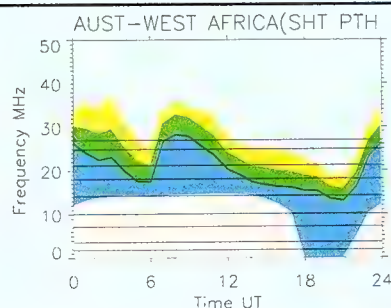
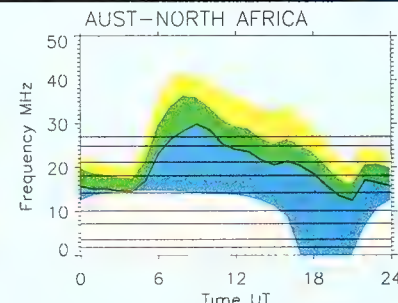
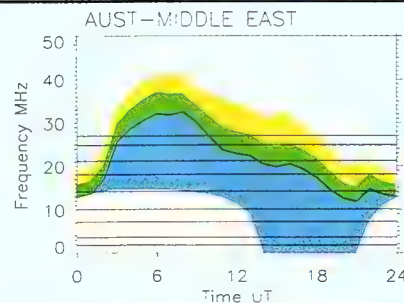
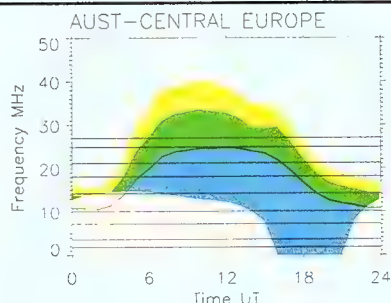
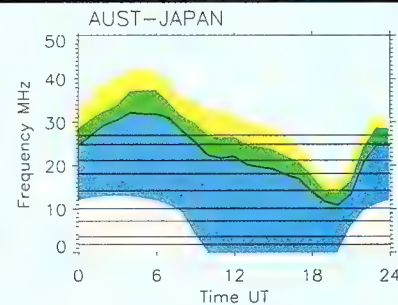
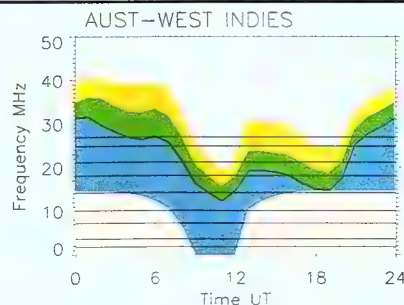
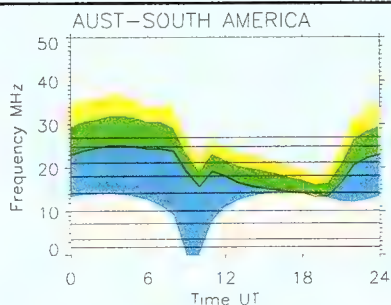
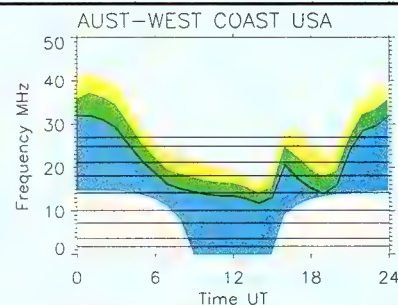
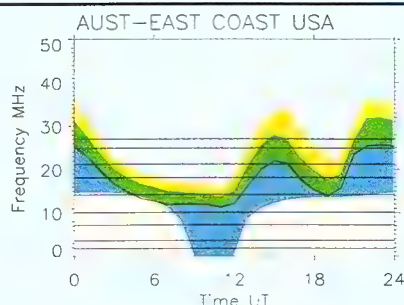
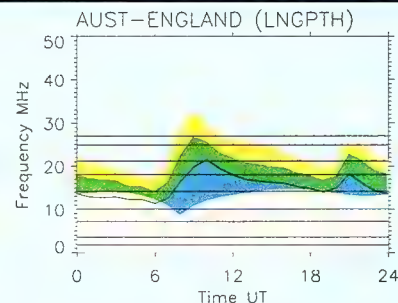
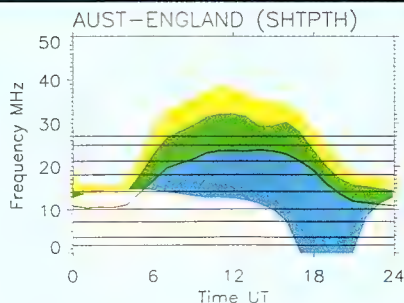
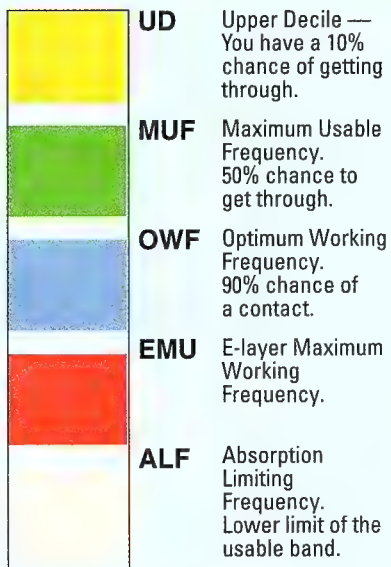
Your questions, comments, requests or recommendations about these charts are welcomed. Please write to the Editor, Radiomag, PO Box 123, Eagle Heights, QLD 4271 or E-mail editor@radiomag.com



CHARTS MARCH



LEGEND



THE TX DX REPORT



First of all, let me introduce myself to those amateurs who do not know me. My name is Alex Ihasz, but everyone calls me 'Tex'. My amateur radio hobby started in May 1993, with my Novice Call VK1MTX. In December of the same Year I passed The AOCIP and received my existing call sign VK1TX.

In the first couple of years I was very active on the 80m band, talking with VK and ZL stations and also helped run the very successful "Truckies Net" which had a weekly Trivia Night. That was great fun, but I soon learned that there was something missing in my amateur radio life — of course, the thrill of chasing DX and talking DX!

I now enjoy DXing and running a few DX nets, along with the general skeds with my friends on the various bands. Because of the supportive and very generous help from my radio friends, I was able to visit the Dayton Hamvention, both in 2000 and also 1999.

Through this hobby I have fostered many friends, both in Australia and worldwide, whom I hope will become lifetime "mates" as they say in Australia.

Having worked and confirmed 305 DX countries so far, I feel I may be able to contribute in some way DX news and information in the forthcoming issues of our new Radiomag publication.

Finally, please, all you out there, *use the bands*. As has so often been said, "use them or lose them"!

Where and how to work DX?

This is the questions a lot of operators are asking: where and how do I work DX? Well, in my opinion, there are basically four ways, viz:

- 1... The DXpedition
- 2... The DX Nets
- 3... Your random DX call "CQ CQ DX de..."
- 4... Just generally listening around the bands.

Let's look at each in turn.

1. The DXpedition

This method is of course the most obvious way to snare that rare DX Country. It sometimes is very easy to work the DXpeditions, mainly due to them being close to us as, for example, the recent TXØ and 4W6 operations were.

But it's the most sought-after countries like, say, Bouvet Island and Annobon Island that can be the difficult ones to get. Especially when VK and ZL seemed, at times, to be left out from the DX stations order of call areas!

My advice is to definitely and clearly call your entire call — eg VK1TX — and *not* just the 'last two', for the DX station *will* hear the VK call amongst the pile-up of JAs and Ws and, of course, the Europeans.

The real art to a successful contact is TIMING — you have to listen and then listen *again*, and then and only then make your call, especially when working split operation.

Many a time I listen for a station that just worked the DX station, rather than the DX call, because that way you have a very good chance to 'slot in' immediately after that station. Also, do not consistently call your call-sign over and over; listen for the breaks etc.

If the DX is working by 'the numbers or call areas', respect his requests and *don't* butt in. Also, check out the traffic at the time. Don't waste your time or the other station's time by giving your QTH, or the weather report etc, because there's nothing more annoying for the operators when amateurs do that to a very rare DX country! Just your call-sign, your report, his report and, depending on the pile-up size, your name. Also don't hold them up by asking him what their QSL route is! You should listen for a while more, and they will announce it in good time.

2... The DX Net

How a DX Net works is that you have a designated *Net Controller* for the day. He takes 'check ins' from the local stations, and then puts out a general call for any DX stations. From this a list of local and DX stations is made, and it's the net controller's job to control the order of the callers via the list.

Check ins are usually taken by asking for the last two letters of your callsign. The reason for this is that, in places like Europe where 50 or so stations call in at once, the Net controller would never be able to decipher the callsigns! Besides, it saves time as well with the list gathering.

In truth, this is a very controversial subject. There are a lot of amateurs out there say-

ing that working a DX station via a net list operation is not truly getting a contact, and that you are being 'spoon fed' and so on. My personal opinion is that it is a valid contact, provided that the net controller (or anyone for that matter) does not also give out the signal reports to either station!

A typical contact would start with the net controller saying "Station 'TX', make your call." That station would then call the desired DX station, giving his or her callsign in full, plus the signal report and then the DX station replies and so on. But if either side does not get the report or callsign correct, then it's up to the net controller to say "you have got his signal report wrong or callsign incorrect. Try once again." Now, if the reports are still incorrect, depending on the pile-up there is at the time, the net controller would move on to the next station, the previous station not having made a valid contact.

My personal belief is that this method of DX contacts gives people who do not have the ability to run beams or amplifiers for whatever reason, get a great chance to work some of the rare DX stations that would otherwise elude them. Also, it provides a great meeting place to catch up with your DX mates who come and join you on a weekly if not daily basis.

Some of the better local DX nets currently running are:

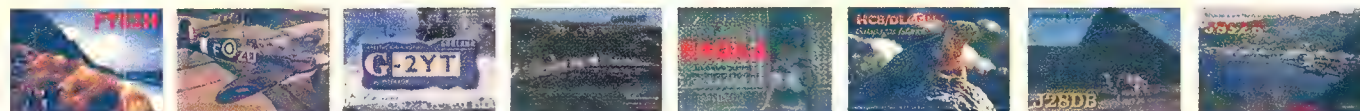
- The ANZA Net, every day on 21.205MHz at 0445z; every day on 14.183MHz at 0500z.
- The Southern Cross DX Net (SXDZ)... every day on 14.2265 MHz from about 1100z (depending on propagation).
- The European DX Net... every weekend on 14.243MHz from 0600z.

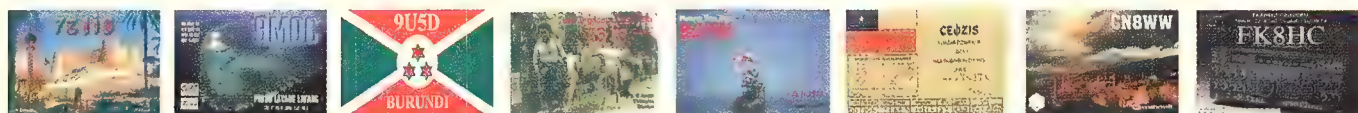
Check them out, you will find a nice bunch of amateurs there!

3... Your random call

This one is, of course, self-explanatory. But a lot of amateurs are afraid to put out that 'CQ' call! But believe me it *works* and you will be surprised at how many stations come back to you and say "...you're the first VK I have worked. Thank you!"

You find this out for yourself if you try the CQ call, especially on the WARC bands on 17m and 12m.





Anyway, if you find the pile-ups too much to handle you can always go QRT!

4... Listening around the bands

Using this method, which I call the 'SWL mode', you will be surprised what you hear on the various bands, bearing in mind your propagation charts and solar flux values. Hey, give it a try. Even if you don't want to call CQ, you can be sure that plenty of other people will be doing that at just about any time!

And now to where I come in — hopefully by giving you information on forthcoming events and stations heard... you may be able to pick that rare DX as well!

Speaking of which, let's get into the NEWS!

Macquarie Island, VKØ

VKØMM has announced his QSL manager is Alan Roocroft, VK4AAR. QSL direct only to: PO Box 421, Gatton, QLD 4343. He has specifically requested no buro cards. All excess proceeds from the QSL process are to be donated to *Camp Quality*, an Australian charity providing care for the children with cancer and other terminal illnesses. The Australian postal system is secure and efficient, so please dig deep when you mail your card.

Alan is a well-respected QSL Manager and assures a turnaround of 24-48 hours once the cards are printed. The VKØMM card is in full colour, featuring the rare rockhopper penguin found at Macquarie Island. VKs please provide the necessary SASE etc.

Note: VK4AAR is *not* handling cards for the VKØLD operation; these are only available via eQSL (Electronic QSL cards via the internet).

Africa / Atlantic Ocean / Indian Ocean notes

Bouvet Island, 3YØC

Chuck continues to be active from Bouvet as 3YØC, mainly on 20m. However, he does show up once in a while on 80/40/17 metres. Bill, VK4UA continues to take a list at about

0600z every weekend on 14,330 and then QSYs to 14,341 where, with the help of Harry KH6FKG, they contact Chuck and with a bit of luck (maybe I should say a *lot* of luck) some VKs and ZLs *do* make a contact with Chuck 3YØC. Bear in mind it's strictly a list operation, as conditions are not in our favour towards that part of the world. QSL goes to WA4FFW.

Chuck's life has not been easy on the island, and his days seem buried in woes. These continue as I write, with his Icom IC-PW1 linear amp still not working, but support guys have been in daily contact with the Icom reps in Japan trying to find an answer to the problem. They are sending information back and forth daily on the results of many tests.

The HF beam, an early victim of the weather, is repaired and back up on the pole. He is still trying to make up some new antennas. The Hexbeam is the only one of the originals to be in one piece! Unfortunately, the vertical copped it too — and is so badly damaged that it simply is not repairable.

He has some low band wire antennas up, and will work on them as time and weather permits. (The two main pictures on this page are of Chuck's camp.)

Also, he has continual problems with the generators, with a leaking seal exacerbating a low fuel situation. All in all, he is *not* a happy Vegemite hi hi!

Bouvet stop press

It's rare that there is good news from Bouvet lately, but today is the day!!

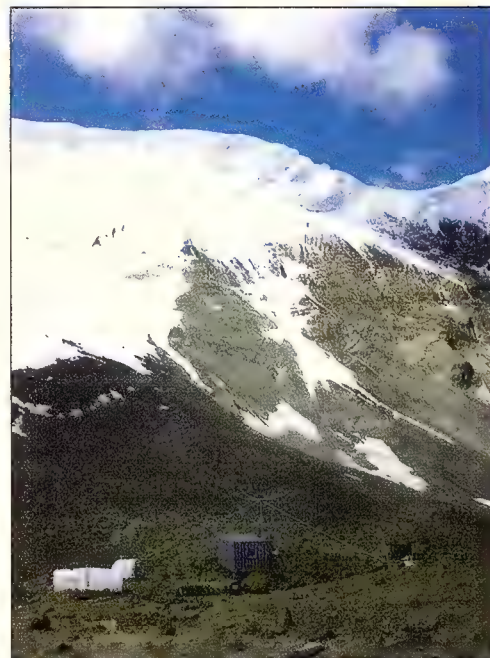
The diesel generator is *fixed*. Chuck said they found a problem with the compression release. He will continue to collect info about the propane conversion just in case of more trouble.



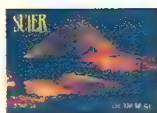
Chuck is now confident he'll be able to charge up his laptop for some RTTY operation as well.

He will be able to operate for more hours now, instead of 30 minutes to an hour at a time because of weak batteries. Good luck to all on the pile-ups!

The Icom amp, however, is still dead...



THE TX DX REPORT



Comoros D68C DXpedition

Comoros Island is to be active from February 8 to 28. Their container of equipment is all ready. It's waiting for them at D68, and the first group of operators flew out last Sunday, February 4, as I write.

This operation looks like turning out to be one of the best and biggest DX operations ever! Over to PR officer Neville, G3NUG, who goes on to explain:

"It might be appropriate to explain the rationale for what we are doing with this DXpedition. These days, with small radios and cheap airfares, there are many one- or two-man expeditions, and long may they continue. But such operations cannot expect to make more than maybe 10 or 20k QSOs.

"This is great news for the well equipped DXer. However, after our 9MØC Spratly Island DXpedition, we were surprised to find as we visited local radio clubs that, despite 65k! QSOs, many of these folk hadn't worked us, not even on one band. Indeed, for many of them DXing wasn't a serious option. Maybe 90% of these people had HF radios, but many lived in apartments, or were otherwise restricted in putting out a big signal. They wanted to be involved in DX, but felt disenfranchised. They heard the DXpeditions going out and working the same DXers time and time again.

"What we resolved to do was put on a DXpedition which would bring some excitement back to HF operation for those who were at a disadvantage, for whatever reason. We want to work our way far enough through the pile-ups to give everyone a chance to work us at least once. Indeed, we would encourage those of you who have an HF rig that is gathering dust to put up, say, a single-band sloping dipole, aimed at D6, and put the rig back into service. And give us a call! Maybe not in the first week or so of the operation, but once the pile-ups have started to diminish.

"At the same time, of course, we want to offer the better-equipped DXers the chance to work some new modes or band countries, hence the fact that we will also be operating 160m, PSK31, 6m, satellites etc. With 26 operators, a huge array of hardware, and almost a month on the island, we believe we really can offer the opportunity of some fun DX.

"All D68C operators will all be briefed to identify regularly. Initially all operations will be split. We will not be working by the 'numbers' and will not be joining lists or nets.

"We will take care to check the rough paths, such as that to VK/ZL. We will try to give SSB and CW roughly equal treatment."

The Pilot station for Asia and Oceania is Ray, G3NOM, whose E-mail address is g3nom@rast.or.th. "Feedback" URL: <http://www.DXbands.com/comoros/zaypilot.shtml>

QSL: Direct to G3SWH, Phil Whitchurch, 21 Dickensons Grove, Congresbury, Bristol, BS19 5HQ England or Bureau or via E-mail (please ensure you E-mail the correct QSO information!); these cards will be returned via the Bureau. E-mail address: phil@g3swh.demon.co.uk. Web Site <http://www.DXbands.com/comoros>

Tunisia, 3V

A YL operator was heard at the controls last week from 3V8BB on 20m. Listen for Zaida to show up on 14,260kHz starting around 1100z and staying as late as 1400z.

Uganda, 5X

Peter, 5X1T has been QRV on 20m using SSB from 1930 to 2030z. QSL to ON5NT.

Ascension Island, ZD8

John, ZD8CA is QRV for at least a few weeks. QSL to home call KR6MR.

ASIA and PACIFIC notes

Vietnam, 3W

This entity continues to have activity from it. 3W6AR was heard on 21,274kHz from about 0015z to 0100z. Hau 3W6LI, was also heard from Saigon on 28,475kHz around 0930z. QSL via IK2DUW.

Palau, T88

Shoji M Miyake writes in an E-mail:

"Hello everyone in VK. This is Mike, VK1CW. I will go to the Republic of Palau during February with my friends, and be active from February 16 to 20.

"Will be operating from 1.8-28MHz,

including the WARC bands, on CW, SSB, and FM on 29MHz.

"Callsigns will be T88SM operated by JA6EGL. QSL via JA6EGL. Also T88VO operated by JA6VOV. QSL via JM6VOV."

Conway Reef, 3D2/C

Conway is about to be activated by another DXpedition team. The group had almost everything ready but then had a three-day delay inflicted on them because YS1RR's visa for Fiji was still in the grinder in the Fiji Embassy in Washington DC.

"Our departure now will be on February 17. We should arrive in Fiji on February 19, and we will be leaving for Conway Reef on February 20. We hope to start operations on February 22 at 0800z.

"There will be eight operators (five Yugoslavian, two Macedonian and one Salvadorian). Our three stations will be running 1kW each, with two 3-element beam antennas for 10/15/20 and also 12/17m. Vertical antennas will be used for the low bands, and all will be running simultaneously.

"Modes will be SSB, CW, RTTY, PSK31 and SSTV. We will be there until March 1. Operators are: YT1AD, YU7AV, YU1NR, YZ7AA, YU1DX, Z32ZM, Z32AU and YS1RR."

The group's web page is: <http://www.kragujevac.co.yu/3d2>

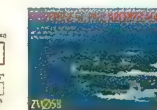
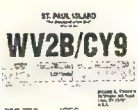
QSL: YU1AD, Hrane Milosevic, 36206 Vitanovac. Yugoslavia.

Syria, YK9A

In yet another DXpedition operation, the YK9A team arrived safely in Damascus, Syria on February 4, on schedule with about 90% of their equipment. Three of K9LA's bags didn't make it on the same flight, although the was hopeful that the missing luggage would turn up safely. As I write, the group is in the process of getting everything set up.

The Battle Creek Special and Cushcraft R5 vertical are up. The radio room has a total of three power points for four stations plus the monitoring station, so they reported the tangle of wires was incredible during the setup phase!

The team finally hit the air, using split operation, early February 5 UTC time. You can watch this DXpedition on the web as well,





by visiting the team's site at <http://qsl.net/k7ar/yk9a>

QSL: K9LA, Carl Luetzelschwab, 1227 Pion Road, Fort Wayne, IN 46845 USA or via the Bureau.

Marquesas, FO0/M

Wolfgang, DL1AWI, Matthias, DL5XU and Peter, DL3APO are on track as I write for their operation from the Marquesas at Nuka Hiva (OC 027). The operation is set for February 11-28.

QSL via the DARC Bureau, or direct to: Wolfgang Ziegler, Arno-Schlothauser Str 15, 99842 Ruhla, Germany.

Wake Island, KH9

Terry, K7ASU is active from Wake as K7ASU/KH9 until February 24. His activity is mostly on PSK31, with some CW. QSL via K7ASU. Mike, VK1MJ says he worked Terry on 20m PSK31 at about 1050z. Mike added that Terry would be working from the island for the next five weeks, and would be QRV as time allowed on 20m and 10m, especially on Sundays.

PSK and MFSK16 users would be interested to check out a very good web site, which contains a list of comprehensive links for the digital radio enthusiast. Go to <http://groups.yahoo.com/group/digitalradio>

Vanuatu, YJ

Bernard, DL2GAC, and Sigi, DL9FN, were active from Vanuatu as YJ0AFN and YJ0ABS until February 10. The more interesting news, however, is that they then hope to activate some rare IOTA islands if they can solve transportation problems. From YJ0 they will go to H44 land, and so on to the rare IOTA islands. Keep your ears open for them!

QSL to their home calls.

South America - Caribbean

Falkland Islands, VP8

Paul, VP8DBQ, has been active on 20 and 15 metres between 0930z and 1030z of late. Check 21,297 and 14,250 kHz. QSL to home call M1AIB.

Of note is that he is listening out specifically for VK and ZL, and will always break the pile-up to work us. Now *that's* good and welcome news!

Felix and Ambrosio, CE0/SA

The CE0ZT DXpedition was set for February 12-20. Marco, CE6TBN reports that the group will participate in the ARRL CW Contest as a Multi/Single entry.

QSL goes to: CE6TBN, Marco A Quijada, PO Box 1234, Temuco, Chile.

Europe

Franz Josef Land, R1FJ

R1FJV has been QRV on 160m and 80m between 2300z and 0000z (no good whatever for VKs!) but has also been heard on 17m after 1000z. Keep your ears peeled for this one!

QSL to UA3AGS.

Guernsey, GU

Ed, G3SQX, will be QRV as MU2K from the Guernsey Amateur Radio Club in the CQ WW 160m contest. QSL to home call.

Future activity...

Malpelo Island, HK0/M

Pedro HK3JJH, has advised OPDX that he is planning a DXpedition to Malpelo for which he has permission. There are no dates given so far. However, he is looking for some help (green stamps) for this project. He plans to be on the island for a month and will be active on all the bands from 80 to 10 metres SSB and possibly RTTY.

Let's hope he goes for it, as Malpelo is quite a rare one for this part of the world.

IOTA DXpeditions by Bert, PA3GIO

Bert informs us that he is going to be very busy activating IOTAs this year in the Caribbean, Central America, Indian Ocean and the Tasman Sea. More as it comes to hand...

Bhutan, A5

Dimitri, RA9CO will be active as A52CO from March 15-21, on all bands CW and SSB. QSL details were still TBA at press time.

Antigua, V2

Chuck, N2CY will be operating from Antigua February 27 to March 4, and expects to sign V26CY. He will enter the ARRL SSB Contest as well. QSL to home call.

Pratas Island, BQ9P

Paul, BV4FH reports an operation as BQ9P is scheduled to take place from Pratas Island (AS-110) on March 6-15.

Niger, 5U

Several Italian amateurs will operate from Niger between February 27 and March 12.

The callsigns will be issued upon the group's arrival. They plan to have three stations running and operate on 160-10 metres CW/SSB. QSL to I2YSB.

Past DX information

Bangladesh, S2

John KX7YT, was active in Bangladesh as S21YV on SSB, CW, PSK31, MFSK. He hopes to be back there in April this year.

QSL to home call KX7YT.

Chad, TT8

Two stations were active this past week as I write, being TT8FC and TT8RH. So if you were lucky enough to work them on either 40/20/15, congratulations! Your QSL goes to F8BBT.

Well, that's about it for this first column. Please let me know if you like my style! Any feedback would be appreciated. My sincere thanks go to all the DX outlets that do such a marvellous job in keeping us DXers informed, particularly: ARRL DX news, DX-List, 425 DX News, OPDX Bulletin, VK1ZL Frank, VK1MJ Mike, K9JJR Doc, and other amateurs on air.

Thanks all, and may the DX be with you! 73 from Tex, VK1TX.



modifications

Here is a column dedicated to those who want to improve the performance or abilities of their radios. Each month we look at a couple of different radio units, examining some of the tricks found by countless users around the globe. Our 'Mods Meister', Mike Lambert, VK4VZK, is a guy whose home computer is so crammed with mods that we'll all be old and grey before he runs out of them. And that's just this current batch! Mike is forever finding new and unusual things to do with his toys – and yours! If you have a request for a specific modification, E-mail Mike direct at mods@radiomag.com, and we may be able to publish the mod here for all to enjoy.

These modifications are supplied purely as a reader service from information in the public domain. Please note that we may have tried some of them, but by no means all. Neither Radiomag nor the author make any representations about their correctness, application to your radio, or any other assurances. Note also that by opening your radio, you may void any warranty, and that due care should be taken when working on either mains-powered or DC-powered equipment.



The Yaesu VX-5R tri-band HT

Although all Yaesu VX-5Rs look the same, there have to date been three different generations of this mighty tri-band amateur handheld transceiver. There are a few things to do, but before considering a single thing, we need to know which generation your radio is.

We find out by examining the serial number, conveniently found on the back of the transceiver right under the belt clip.

Serial Number 7Axx to 7Zxx are the first generation VX-5Rs; 8Axx to 8Zxx are the second gen; while 9Axx to 9Zxx and 0Axx to 0Zxx are third generation VX-5Rs. There are six digits where I have the 'xx' above.

First and second generation VX-5Rs came from the factory with the same factory default jumper configuration (solder bridges), while the third generation VX-5Rs come with different factory jumper configurations.

The information listed here is from actual USA versions of the VX-5R, although it does appear to apply to Australian ones as well. In the text below, X indicates no solder bridge,

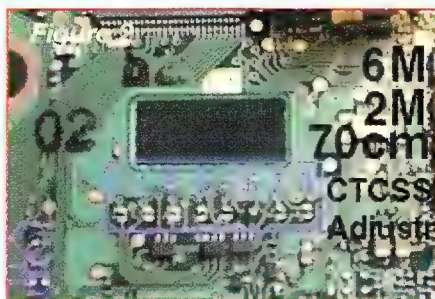
By Mike Lambert, VK4VZK
E-mail mods@radiomag.com

while O means a solder bridge or blob is in place. Note that before you do a thing here, should you decide to proceed, I'd suggest you hook up your radio to your local computer and download your latest memory channels and settings data using the ADMS package, as the final part of the modification involves resetting the main CPU.

Modifications for first and second generation VX-5Rs

- 1) Remove Battery
- 2) Remove the Sticker / Cover for the Pressure Sensing Unit (SU-1)
- 3) Remove the SU-1 Pressure Sensing Unit Option Board (if installed)
- 4) Factory Configuration for USA VX-5R is X X X O O O X X, where X = No Solder Bridge O = Solder Bridge. (My second generation Aust-spec VX-5R is like that. Ed.)
- 5) For MARS/CAP, remove the fourth solder bridge. Your jumpers should then look like this: X X X X O O X X
- 6) For the greatest possible flexibility, remove the fourth and fifth solder bridges. Your jumpers look like this X X X X O O X X
- 7) Reassemble the radio and reset its CPU prior to trying to use it further. (The keystroke combination is PWR-MR-VFO-4.) You will lose all stored memory channels and custom settings, and the radio is now modified.

The MARS/CAP modification enables the transmitter over the following expanded frequency range: 50 to 54MHz, 140 to 174MHz and 420 to 470MHz. The expanded frequency range enabled in Step 6 may be slightly greater, although the radio may not lock up on certain frequencies in the range.



Modifications for third generation VX-5Rs

- 1) Remove Battery
- 2) Remove the Sticker/Cover for the Pressure Sensing Unit (SU-1)
- 3) Remove the SU-1 Pressure Sensing Unit Option Board (if installed)
- 4) Factory Configuration for USA VX-5R usually looks like X X X O O X X X, where X = No Solder Bridge O = Solder Bridge.
- 5) For MARS/CAP, remove the fourth solder bridge and solder across the sixth jumper, which is currently devoid of solder (see note below). Your jumpers should now look like this X X X X O O X X



Figure 3

- 6) For the greatest possible flexibility, remove the fourth and fifth solder bridges and solder a bridge on the sixth jumper. Your jumpers should now look like this X X X X O O X X
- 7) Reassemble the radio and reset its CPU prior to trying to use it further. (The keystroke combination is PWR-MR-VFO-4.) You will lose all stored memory channels and custom settings, and the radio is now modified.

The MARS/CAP modification enables the transmitter over the following expanded frequency range: 50 to 54MHz, 140 to 174MHz and 420 to 470MHz.

You might also like to visit the web site of EVE (a VX-5R programming software package), which can be found at this address: <http://www.icongrp.com/~sllewd/vx5rmain.htm>

Shown in the middle of Figure 2 (with the board removed from the radio) are the eight jumpers that can be seen when the sticker for the barometric sensor is peeled back. This VX-5R is serial 8Nxxxxx (second generation) and has been modified for extended TX.

The transmit audio level adjustment shown in Figure 3, with the board in place.

AOR AR-8000 scanner filter

Here's another beauty off the web, this time dealing with the filter selections in the AOR AR-8000 scanner. Its author added a caveat: "To my knowledge no one has actually posted a filter mod; here is what I did. This is my approach and I only know it works well on my AR-8000. Your results may vary. Others may have a different solution that works better or worse. Is it worth the effort? In my opinion YES!" Once this is done to your pride and joy, the search mode is vastly improved on the SW bands:

- Search stops on the primary frequency and not one or two times before and after.
- Readability of SW stations is vastly improved. In some receiving instances it reduces adjacent channel interference noticeably.
- On AM receive, for aviation frequencies, a pronounced improvement in audio quality is noted. You will be able to select WIDE or NARROW for AM, NFM, USB, LSB.

The bad news is that there is no way to adequately describe the locations on the circuit board to be cut and soldered to. You will have to buy or borrow a service manual!

Over to the author again: "This is a difficult mod to perform. I have been a ham for over 30 years and have extensive home-brew experience.

"It took all my skill and a magnifying glass to perform this mod without damaging the radio. IF YOU ARE NOT QUALIFIED DO NOT ATTEMPT THIS MOD! Find a qualified helper." If you feel confident enough to proceed, study the electrical mods described below and then, using an ohmmeter and the service manual, find the locations to modify on the circuit board.

What is modified electrically:

A jumper that is used parallels the 4kHz filter (F4) circuit to bypass the filter for WIDE reception. This selection process is accomplished by switching diodes on each end of the filter and bypass.

Find U2 pin 11 (AM, FM filter bypass) line. Trace this line to a 22K resistor that connects to the switching diodes (near the F4 filter). The voltage from pin 11 is used to bias these diodes into conduction. Cut through the circuit trace at a convenient location just before the 22K resistor.

Find U2 pin 4 (SSB, CW filter inline) line. Trace this line to two 22K resistors that connect to the switching diodes (near the F4 filter). The voltage from pin 4 is used to bias these diodes into conduction. Cut through the circuit trace at a convenient location just before the two 22K resistor junction.

Unfortunately, there is no way for me to put a schematic in for this next part, but if you draw it out on paper you should be okay. You are going to mount a small switch on the radio. This will be a SPST switch.

Connect a wire from the WIDE side of the switch to the single 22K point.

Connect a wire from the NARROW side of the switch to the dual 22K resistors point.

Connect two 1N914-style switching diodes together to the switch common. You connect them with the black band facing the switch.

Connect U2 pin 11 to the open end of one diode and U2 pin 4 to the open end of the other.

What you have done is to install a switch to reverse the normal filter selection of F4. The 1N914 diodes serve to prevent turning on the BFO in the AM mode and to prevent grounding when in the WIDE SSB mode.

The author concludes: "I make no guarantees; your results could vary. You might not have much fun performing this mod but you will enjoy the results."

73 from Bob, K8WX (WM8P) / GROL/GMDSS/M



Kenwood TM-G707A

The Kenwood TM-G707A dual-bander gives excellent performance in extended receive operation. Here's how to get it if your radio does not...

- 1) Disconnect power cord and antenna from the transceiver.
- 2) Detach the control head and set it aside.
- 3) Remove the top and bottom covers (nine screws) from the radio.
- 4) Carefully lift up the locking tabs on the top and bottom side of the front panel. Pull the front panel forward to expose the control board. Do not break the two ribbon cables connecting the control board to the TX-RX board.
- 5) Remove the one screw from the control board to access the bottom of the board (component side). There is no need to disconnect the ribbon cables.
- 6) Locate the two green jumper wires on the component site of the control board.
- 7) Cut the one labelled W501. If required, insulate the ends of the wire so they do not make contact with the PCB.
- 8) Reassemble the transceiver. The transceiver will automatically reset when turned on.

Receive capability following mod: 118.000-173.995, 400-523.995, 320-399.995, 800-823.9875, 849-865.9875 and 894-949.9875MHz.

MARS/CAP TX mod:

Remove the top and bottom covers and the detachable face holder. Look for the PC board that is vertical behind the front of the radio. There will be two small chip resistors on the left side of the board.

Carefully remove the chip with the number 1. It will be the one closest to the left near the grounding spring. You will probably have to 'scrape' it off with a pair of needle nose pliers. After you remove it, the TX should be VHF TX 136.995-173.995. UHF TX should be 410-469.995 MHz.

The drawback to this mod is that you lose the auto repeater offset capability. You will have to manually enter repeater offsets.

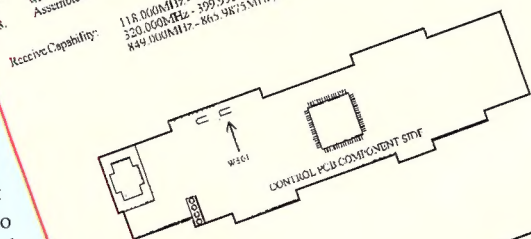
We recommend you use the computer interface to program the radio. You can download this from [ftp://ftp.kenwood.net/SOFTWARE/TMG707A/](http://ftp.kenwood.net/SOFTWARE/TMG707A/)

When you perform the mod, the radio resets and all memory is lost. If you have the computer interface, you can 'read' all data

SUPPLEMENTARY INFO

DATE: 05/08/98
SUBJECT: TM-G707A EXTENDED RECEIVE MODIFICATION
This modification is provided "as is" and is subject to change without notice. Kenwood Service Corporation makes no warranty of any kind with regard to this modification procedure, including, but not limited to, the implied warranties of merchantability and fitness for a particular purpose. Kenwood Service Corporation shall not be liable for any error or for incidental or consequential damage in conjunction with the furnishing, performance, or use of this modification procedure.

1. Disconnect the power cord and antenna from the transceiver.
2. Detach the head and set it aside.
3. Remove the top and bottom covers (9 screws) from the transceiver.
4. Carefully lift up the locking tabs on the top and bottom side of the front panel. Pull the front panel forward to expose the control board. Do not break the two ribbon cables connecting the control board to the TX-RX board.
5. Remove the one screw from the control board to access the bottom of the board (Component Side). There is no need to disconnect the ribbon cables.
6. Locate the two green jumper wires on the component side of the board (Component Site). Cut the one labelled W501. If required, insulate the ends of the wire so that they do not make contact with the PCB.
7. Reassemble the transceiver. The transceiver will automatically reset when turned on.
8. Assemble the transceiver. The transceiver will automatically reset when turned on.



Receiver Capability: 118.000MHz - 173.995MHz, 400.000MHz - 523.995MHz, 320.000MHz - 399.995MHz, 800.000MHz - 823.9875MHz, 849.000MHz - 865.9875MHz, 894.000MHz - 949.9875MHz

from the radio, save it, and then re-program it again from the file. It's also much easier to program the radio, channel names, offsets, and so on from the computer than it is on the radio's control panel.

Catch you with more next time. And remember, feel free to direct any specific modification inquiries to mods@radiomag.com. **R**

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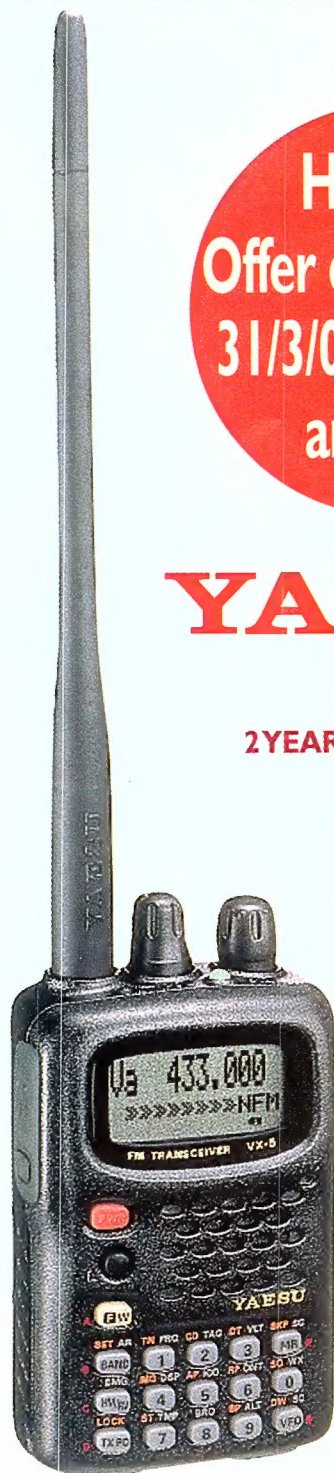
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VX-5R pictured showing large frequency digits

Offer expires 31/3/2001.

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Tiny, yet incredibly rugged, the VX-5R provides 6m, 2m and 70cm Amateur band operation with 5W output as standard (4.5W on 70cm), made possible by a unique PA design, super high-capacity 7.2V 1100mA/H Lithium-ion battery, and a diecast metal case. Plus, ultra-wide VHF and UHF as well as medium-wave* and shortwave reception facilities are provided.

Another really useful feature is the large backlit dot-matrix LCD screen that can be configured to suit your operating needs.

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- Spectra-Scope™ for monitoring adjacent channel activity
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Yaesu's new FT-1500M represents a breakthrough in 2m mobile transceiver design, blending an extremely efficient transmitter with an almost bullet-proof receiver front end, and all packaged in a super-rugged die-cast aluminium casing that measures just 127 x 35 x 126mm. You get a powerful 50W RF output transmitter, direct keypad frequency entry, Alpha-numeric memory labelling, easy data interfacing, and much, much more.

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- 50W RF output, with selectable 5, 10, or 25W lower power levels. The efficient PA stage only draws 8A at 13.8V DC for full RF power output.
- High-performance receiver front-end circuitry using Yaesu's renowned Advanced Track Tuning (ATT) tracking bandpass filter design for greatly reduced interference from strong out-of-band signals.
- Includes MH-48B6J DTMF microphone for direct keypad frequency entry. Includes rear panel mini-DIN socket for easy 1200/9600 baud connection to your TNC for Packet operation.
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- Smart Search™ feature uses a bank of 31 special memories to store active channels as the FT-1500M searches a portion or the whole of the 2m band.
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Offer expires 30/4/2001.

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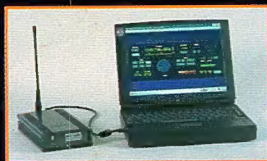
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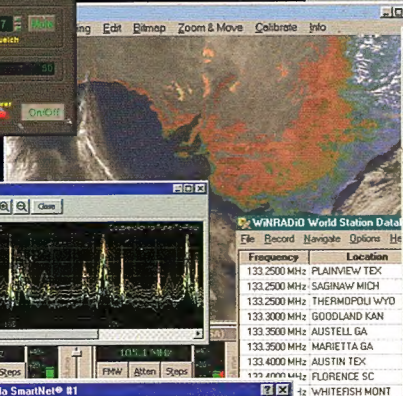
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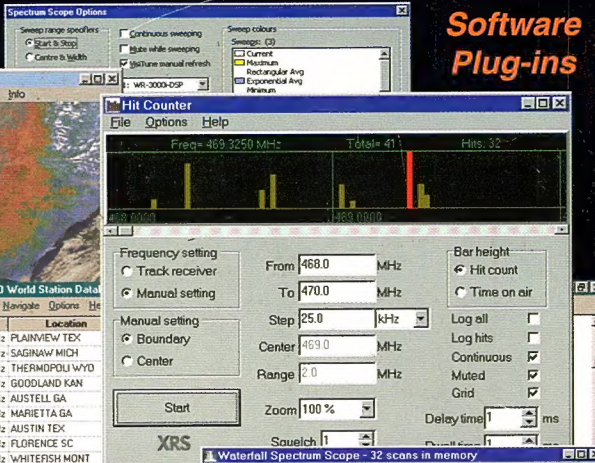


Virtual control panel

Weather fax



Software Plug-ins



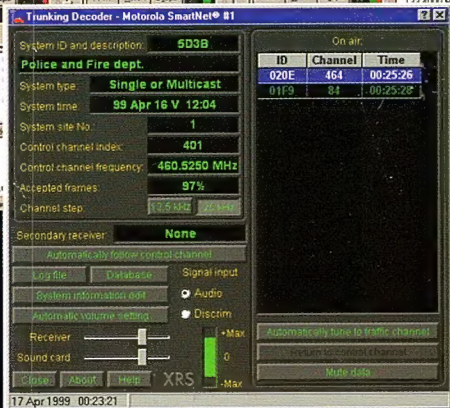
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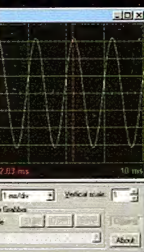
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